

**Table 7-2. U.S. STANDARD ATMOSPHERE, TO 300,000 ft\***  
**45° North Latitude, July**

For variations of high altitude atmosphere with latitude and season, see Table 7-3.

**SYMBOLS:**

$Z$ , ft — geometric altitude, feet

$Z$ , m = geometric altitude, meters

$H$ , ft = geopotential altitude, feet

$t$ , °F = temperature, degrees Fahrenheit

$t$ , °C = temperature, degrees Celsius

$P$ , in. Hg = pressure, inches of mercury.

For atmospheres multiply by

0.0334210. For psia multiply

by 0.491154.

$\rho$ , English = density. For lb<sub>m</sub>/ft<sup>3</sup> multiply by 10<sup>-3</sup>.

$\rho$ , metric = density. For kg/m<sup>3</sup> multiply by 10<sup>-3</sup>.

$V_s$ , fps = speed of sound, ft/sec. For m/sec multiply by 0.3048.

$\mu$  = viscosity. For lb<sub>m</sub>/ft sec multiply by 10<sup>-5</sup>. For g/cm sec (poises) multiply by 10<sup>-5</sup> and by 14.882.

$k$  = thermal conductivity. For Btu/sec ft °R multiply by 10<sup>-5</sup>. For watts/cm °K multiply by 10<sup>-5</sup> and by 62.306.

$Z$ , ft	$H$ , ft	$Z$ , m	$t$ , °F	$t$ , °C	$P$ , in. Hg	$\rho$ , English	$\rho$ , metric	$V_s$ , fps	$\mu$	$k$
0	0	0	73.5	23.1	29.93	74.4	1,192.	1,132	1.228	.417
1,000	1,000	305	70.7	21.4	28.89	72.2	1,157	1,129	1.223	.415
2,000	2,000	610	68.0	20.0	27.89	70.1	1,123	1,126	1.218	.413
3,000	3,000	915	65.2	18.4	26.91	68.0	1,090	1,123	1.213	.411
4,000	3,999	1,220	62.4	16.9	25.96	65.9	1,057	1,120	1.209	.409
5,000	4,999	1,525	59.7	15.4	25.05	63.9	1,025	1,117	1.204	.407
6,000	5,998	1,830	57.0	13.9	24.16	62.0	994	1,114	1.199	.405
7,000	6,998	2,135	53.9	12.2	23.30	60.1	964	1,111	1.193	.403
8,000	7,997	2,440	50.4	10.2	22.46	58.4	936	1,107	1.187	.401
9,000	8,996	2,745	46.9	8.3	21.65	56.6	908	1,103	1.180	.398
10,000	9,995	3,050	43.4	6.3	20.86	55.0	881	1,100	1.174	.396
11,000	10,994	3,355	40.0	4.4	20.09	53.3	855	1,096	1.168	.393
12,000	11,993	3,660	36.6	2.6	19.35	51.7	829	1,092	1.162	.391
13,000	12,992	3,965	33.2	.7	18.63	50.1	803	1,088	1.155	.389
14,000	13,991	4,270	29.8	-1.2	17.94	48.6	779	1,085	1.149	.386
15,000	14,989	4,575	26.5	-3.1	17.26	47.1	755	1,081	1.143	.384
16,000	15,988	4,880	23.1	-4.9	16.61	45.6	731	1,077	1.137	.381
17,000	16,986	5,185	19.7	-6.8	15.97	44.2	708	1,073	1.130	.379
18,000	17,984	5,490	16.4	-8.7	15.36	42.8	686	1,070	1.124	.377
19,000	18,983	5,795	13.0	-10.6	14.77	41.4	664	1,066	1.118	.374
20,000	19,981	6,100	9.61	-12.5	14.19	40.1	643.	1,062	1.111	.372
21,000	20,979	6,405	6.02	-14.4	13.63	38.8	622	1,058	1.105	.369
22,000	21,977	6,710	2.44	-16.4	13.10	37.6	602	1,054	1.098	.367
23,000	22,975	7,015	-1.14	-18.4	12.57	36.4	583	1,050	1.091	.364
24,000	23,972	7,320	-4.72	-20.4	12.07	35.2	564	1,046	1.084	.361
25,000	24,970	7,625	-8.31	-22.4	11.58	34.0	545	1,042	1.077	.359
26,000	25,968	7,930	-11.9	-24.4	11.11	32.9	527	1,037	1.070	.356
27,000	26,965	8,235	-15.5	-26.4	10.65	31.8	510	1,033	1.063	.353
28,000	27,962	8,540	-19.0	-28.3	10.21	30.7	492	1,029	1.056	.351
29,000	28,960	8,845	-22.6	-30.4	9.79	29.7	476	1,025	1.049	.348
30,000	29,957	9,150	-26.2	-32.3	9.38	28.7	460	1,021	1.043	.346
32,000	31,951	9,760	-33.3	-36.3	8.60	26.7	428	1,012	1.029	.340
34,000	33,945	10,370	-40.4	-40.2	7.87	24.9	399	1,004	1.014	.335
36,000	35,938	10,980	-47.6	-44.2	7.19	23.1	371	995	1.000	.330
38,000	37,931	11,590	-54.7	-48.2	6.56	21.5	344	987	.986	.325
40,000	39,923	12,200	-61.8	-52.1	5.98	19.9	319.	978	.972	.319
45,000	44,903	13,725	-71.5	-57.5	4.71	16.1	258	966	.952	.312
49,880	49,880	15,250	-71.5	-57.5	3.70	12.7	203	966	.952	.312
55,000	54,855	16,775	-71.5	-57.5	2.91	9.95	159	966	.952	.312
60,000	59,828	18,300	-68.8	-56.0	2.29	7.78	125	969	.957	.314
65,000	64,798	19,825	-65.6	-54.2	1.81	6.08	97.5	973	.964	.316
70,000	69,766	21,350	-62.3	-54.4	1.43	4.77	76.4	977	.970	.319
75,000	74,731	22,875	-59.0	-50.6	1.13	3.75	60.3	981	.977	.321
80,000	79,694	24,400	-55.8	-48.8	.898	2.95	47.2	985	.984	.324
85,000	84,655	25,925	-52.5	-46.9	.714	2.33	37.3	989	.990	.326
90,000	89,613	27,450	-48.7	-44.8	.569	1.84	29.4	994	.998	.329
100,000	99,523	30,500	-37.3	-38.5	.364	1.14	18.3	1,008	1.021	.337
125,000	124,255	38,125	-4.6	-20.3	.126	.368	5.90	1,046	1.084	.361
150,000	148,929	45,750	29.3	-1.50	.047	.129	2.06	1,084	1.148	.386
175,000	173,544	53,375	32.5	.28	.019	.0503	.807	1,088	1.154	.388
200,000	198,100	61,000	-1.2	-18.4	.0071	.0205	.329	1,050	1.091	.364
250,000	247,039	76,250	-116.2	-82.3	.0007	.0028	.0444	909	.857	.278
300,000	295,746	91,500	-156.6	-104.8	.00004	.0002	.0025	855	.770	.247