



VACUUM REFERENCE CHART

Feet	Miles	Meters	F	C	Hg. Vacuum	In. Hg. Abs.	mm Hg. Abs.	PSIA	Kg / sq. cm	kPa A	Millibars	atm	Torr
656,000	124.3	200,000	-58	-50	29.919	9.43X10 ⁻⁸	2.40X10 ⁻⁶	4.64X10 ⁻⁸	3.15X10 ⁻⁹	0	0.01	0.00	0.0016
150,000	28.4	45,720	5	-15	29.877	0.043	1.09	0.021	0.00014	0.15	1.46	0.00	1.09
100,000	18.9	30,510	-51	-46	29.591	0.329	8.36	0.162	0.011	1.12	10.67	0.01	8
90,000	17.1	27,459	-57	-59	29.4	0.52	13.2	0.255	0.018	1.76	17.33	0.02	13
80,000	15.2	24,408	-62	-52	29.0927	0.8273	21	0.406	0.029	2.8	28.00	0.03	21
70,000	13.3	21,357	-67	-55	28.595	1.325	33.7	0.651	0.046	4.49	45.33	0.04	34
60,000	11.4	18,306	-70	-57	27.785	2.135	54.2	1.05	0.0738	7.24	71.99	0.07	54
55,000	10.4	16,781	-70	-57	27.208	2.712	68.9	1.33	0.0935	9.17	91.99	0.09	69
50,000	9.5	15,255	-70	-57	26.476	3.444	87.5	1.69	0.119	11.65	115.99	0.11	87
45,000	8.5	13,730	-70	-57	25.545	4.375	111.1	2.15	0.151	14.82	147.99	0.15	111
40,000	7.6	12,204	-70	-57	24.362	5.558	141.2	2.73	0.192	18.82	187.98	0.19	141
35,000	6.6	10,679	-66	-54	22.86	7.06	179.3	3.47	0.244	23.93	238.65	0.24	179
30,000	5.7	9153	-48	-44	21.017	8.903	226.1	4.37	0.307	30.13	301.31	0.30	226
25,000	4.7	7628	-30	-34	18.8	11.12	282.4	5.46	0.384	37.65	375.97	0.37	282
20,000	3.8	6102	-12	-24	16.16	13.76	349.5	6.76	0.475	46.61	466.63	0.46	350
15,000	2.8	4577	6	-14	13.03	16.89	429	8.29	0.583	57.16	571.95	0.56	429
10,000	1.9	3050	23	-5	9.34	20.58	522.7	10.1	0.71	69.64	695.94	0.69	522
9000	1.7	2746	27	-3	8.53	21.39	543.3	10.5	0.738	72.4	723.94	0.71	543
8000	1.5	2441	31	-1	7.69	22.23	564.6	10.91	0.767	75.22	751.94	0.74	564
7000	1.3	2136	34	1	6.82	23.1	586.7	11.34	0.797	78.19	781.27	0.77	586
6000	1.1	1831	38	3	5.93	23.99	609.3	11.78	0.828	81.22	811.93	0.80	609
5000	0.95	1526	41	5	5.02	24.9	632.5	12.23	0.86	84.33	843.93	0.83	633
4500	0.86	1373	43	6	4.55	25.37	644.4	12.46	0.876	85.91	858.59	0.85	644
4000	0.76	1220	45	7	4.08	25.84	656.3	12.69	0.892	87.49	874.59	0.86	656
3500	0.66	1068	47	8	3.59	26.33	668.8	12.93	0.909	89.15	891.92	0.88	669
3000	0.57	915	48	9	3.1	26.82	681.2	13.17	0.926	90.81	907.92	0.90	681
2500	0.47	763	50	10	2.6	27.32	693.9	13.41	0.943	92.46	925.25	0.94	694
2000	0.38	610	52	11	2.1	27.82	706.6	13.66	0.96	94.19	941.25	0.93	706
1500	0.28	458	54	12	1.59	28.33	719.6	13.91	0.978	95.91	958.59	0.95	719
1000	0.19	305	55	13	1.06	28.86	733	14.16	0.996	97.63	975.92	0.96	732
500	0.09	153	57	14	0.54	29.38	746.3	14.43	1.015	99.49	994.58	0.98	746
0	Sea Level	0	59	15	0	29.92	760	14.696	1.0333	101.33	1013.25	1.00	760
-500	-0.09	-153	61	16	-0.55	30.47	773.9	14.96	1.052	103.1	1030.58	1.02	773
-1000	-0.19	-305	63	17	-1.1	31.02	787.9	15.23	1.071	105	1050.58	1.04	788
-1500	-0.28	-458	64	18	-1.66	31.58	802.1	15.51	1.091	106.9	1069.24	1.06	802
-2000	-0.38	-610	66	19	-2.22	32.14	816.4	15.78	1.109	108.8	1067.91	1.05	816
-2500	-0.47	-763	68	20	-2.78	32.7	830.6	16.06	1.129	110.7	1106.57	1.09	830
-3000	-0.57	-915	70	21	-3.35	33.27	845.1	16.34	1.149	112.7	1126.57	1.11	845
-3500	-0.66	-1068	71	22	-3.92	33.84	859.5	16.62	1.169	114.6	1146.57	1.13	860
-4000	-0.76	-1220	73	23	-4.5	34.42	874.3	16.9	1.188	116.5	1165.23	1.15	874
-4500	-0.86	-1373	75	24	-5.08	35	889	17.19	1.209	118.5	1185.23	1.17	889
-5000	-0.95	-1526	77	25	-5.66	35.58	903.7	17.48	1.229	120.5	1205.23	1.19	904

Perfect Vacuum	0 Torr
Outer Space	1X10 ⁻⁶ to <3X10 ⁻¹⁷ Torr
Extremely High Vacuum	<1X10 ⁻¹² Torr
Ultra High Vacuum	1X10 ⁻⁹ to 1X10 ⁻¹² Torr
High Vacuum	1X10 ⁻³ to 1X10 ⁻⁹ Torr
Medium Vacuum	25 to 1X10 ⁻³ Torr
Low Vacuum	760 to 25 Torr
Atmospheric Pressure	760 Torr

- **Interstellar/Deep Space ≈ 10⁻¹⁷ Torr**
- **Mars ≈ 5 Torr**
- **Lunar Surface ≈ 10⁻¹¹ Torr**
- **Geosynchronous Satellites ≈ 10⁻¹¹ Torr**
- **Space Station (ISS) ≈ 10⁻⁹ Torr**
- **> 264,000 Feet (80.5 km) = U.S. definition of space flight ≈ 10⁻³ Torr**
- **> 105,000 Feet (32 km) turbojets no longer function ≈ 8 Torr**
- **< 40,000 Feet (12.1 km) cargo & passenger airline flights ≈ 141 Torr**