

Appendix F: Lift Table for Helium & Hydrogen at Standard Temperatures & Pressures

Lift Table for Helium and Hydrogen at Standard Temperatures and Pressures (1,000 cubic meter envelope)				
Helium density: 0.01056 pounds/cubic foot at STP Hydrogen density: 0.00535 pounds/cubic foot at STP Air density: 0.07651 pounds/cubic foot at STP Envelope volume: 1,000 cubic meters (35,320 cu. ft.)				
Altitude (feet MSL)	Pressure (in. Hg)	Air Temperature (°F)	Gross Lift (Helium)	Gross Lift (Hydrogen)
0	29.92	59.00	2,329.35	2,513.37
1,000	28.86	55.43	2,262.40	2,441.13
2,000	27.82	51.87	2,196.05	2,369.54
3,000	26.82	48.30	2,131.99	2,300.42
4,000	25.84	44.74	2,068.58	2,232.00
5,000	24.90	41.17	2,007.54	2,166.14
6,000	23.98	37.61	1,947.21	2,101.03
7,000	23.09	34.05	1,888.46	2,037.64
8,000	22.23	30.48	1,831.36	1,976.04
9,000	21.39	26.92	1,775.05	1,915.28
10,000	20.58	23.36	1,720.42	1,856.33
11,000	19.80	19.79	1,667.54	1,799.27
12,000	19.03	16.23	1,614.68	1,742.24
13,000	18.30	12.67	1,564.44	1,688.03
14,000	17.58	9.11	1,514.30	1,633.93
15,000	16.89	5.55	1,466.00	1,581.81
16,000	16.22	1.99	1,418.70	1,530.78
17,000	15.58	-1.58	1,373.34	1,481.83
18,000	14.95	-5.14	1,328.13	1,433.05
19,000	14.35	-8.70	1,284.89	1,386.39
20,000	13.76	-12.25	1,241.84	1,339.94
21,000	13.20	-15.81	1,200.85	1,295.72
22,000	12.65	-19.37	1,160.12	1,251.77
23,000	12.12	-22.93	1,120.57	1,209.10
24,000	11.61	-26.49	1,082.24	1,167.74
25,000	11.12	-30.05	1,045.15	1,127.72
Notes	1. Pressures and Temperatures taken from U. S. Standard Atmosphere Supplements, 1966, ESSA, NASA, USAF; Table 5.2, Geometric Altitudes, English Units			
	2. Tables assume no effects due to superheating or impurities in lifting gas supply.			
	3. Entire volume is assumed to be completely filled with lifting gas as would normally be the case on initial ascent.			
	4. For all descending altitudes, or for partially full envelopes, use the gross lift shown for the altitude at which the envelope would be completely full. This is called the pressure altitude and is equal to the maximum altitude achieved during the flight, if the envelope was full at that altitude. Gross lift does NOT change as balloon descends unless additional lifting gas is lost.			