

HFO-1234yf - Thermodynamic Properties – IP units

Thermodynamic Properties HFO-1234yf

Temperature (°F)	Pressure (psia)	Liquid Density (lbm/ft ³)	Vapor Density (lbm/ft ³)	Liquid Enthalpy (Btu/lbm)	Vapor Enthalpy (Btu/lbm)	Liquid Entropy (Btu/lbm-°R)	Vapor Entropy (Btu/lbm-°R)
-8	17.5	85.2	0.386	73.46	165.71	0.212	0.417
-4	19.3	84.8	0.424	74.70	166.30	0.215	0.416
0	21.2	84.4	0.463	75.94	166.89	0.218	0.416
4	23.2	83.9	0.506	77.19	167.48	0.221	0.415
8	25.5	83.5	0.552	78.44	168.06	0.223	0.415
12	27.8	83.1	0.601	79.69	168.64	0.226	0.414
16	30.4	82.6	0.654	80.95	169.22	0.229	0.414
20	33.1	82.2	0.710	82.21	169.79	0.231	0.414
24	36.0	81.7	0.769	83.49	170.36	0.234	0.413
28	39.2	81.3	0.833	84.76	170.92	0.236	0.413
32	42.5	80.8	0.901	86.04	171.48	0.239	0.413
36	46.0	80.4	0.973	87.33	172.04	0.242	0.413
40	49.7	79.9	1.050	88.62	172.59	0.244	0.412
44	53.7	79.4	1.131	89.92	173.13	0.247	0.412
48	57.9	79.0	1.218	91.23	173.67	0.249	0.412
52	62.4	78.5	1.309	92.54	174.21	0.252	0.411
56	67.1	78.0	1.407	93.86	174.74	0.254	0.411
60	72.1	77.5	1.510	95.19	175.26	0.257	0.411
64	77.4	77.0	1.619	96.52	175.77	0.259	0.411
68	82.9	76.5	1.734	97.86	176.28	0.262	0.411
72	88.8	76.0	1.857	99.21	176.78	0.265	0.410
76	94.9	75.5	1.986	100.56	177.27	0.267	0.410
80	101.4	74.9	2.123	101.93	177.75	0.270	0.410
84	108.2	74.4	2.268	103.30	178.23	0.272	0.410
88	115.3	73.9	2.421	104.68	178.69	0.275	0.410
92	122.8	73.3	2.583	106.08	179.14	0.277	0.410
96	130.6	72.7	2.754	107.48	179.59	0.280	0.409
100	138.9	72.2	2.935	108.89	180.02	0.282	0.409
104	147.4	71.6	3.127	110.31	180.44	0.285	0.409
108	156.4	71.0	3.329	111.74	180.85	0.287	0.409
112	165.8	70.4	3.544	113.19	181.25	0.290	0.409
116	175.6	69.8	3.771	114.64	181.63	0.292	0.408
120	185.9	69.1	4.012	116.12	181.99	0.295	0.408
124	196.5	68.5	4.267	117.60	182.34	0.297	0.408
128	207.7	67.8	4.537	119.10	182.67	0.300	0.408
132	219.3	67.1	4.825	120.61	182.98	0.302	0.407
136	231.4	66.4	5.130	122.14	183.27	0.305	0.407
140	243.9	65.7	5.455	123.69	183.54	0.307	0.407
144	257.0	65.0	5.801	125.25	183.78	0.310	0.407
148	270.6	64.2	6.171	126.84	184.00	0.312	0.406
152	284.8	63.4	6.567	128.45	184.19	0.315	0.406
156	299.5	62.6	6.991	130.08	184.35	0.317	0.405
160	314.7	61.8	7.447	131.74	184.46	0.320	0.405
164	330.6	60.9	7.939	133.42	184.54	0.323	0.405
168	347.1	60.0	8.471	135.14	184.58	0.325	0.404
172	364.2	59.0	9.049	136.90	184.56	0.328	0.403
176	381.9	57.9	9.681	138.70	184.48	0.331	0.403
180	400.3	56.9	10.376	140.54	184.33	0.334	0.402
184	419.5	55.7	11.146	142.44	184.10	0.336	0.401
188	439.3	54.4	12.009	144.41	183.77	0.339	0.400
192	459.9	53.0	12.988	146.46	183.31	0.342	0.399
196	481.3	51.5	14.120	148.63	182.68	0.346	0.397
200	503.6	49.8	15.465	150.95	181.83	0.349	0.396
204	526.7	47.7	17.135	153.50	180.64	0.353	0.394
208	550.9	45.0	19.392	156.46	178.83	0.357	0.390
213.9	588.8	32.0	32.0	167.63	167.63	0.373	0.373

HFO-1234yf - Thermodynamic Properties – SI units

Thermodynamic Properties HFO-1234yf

Temperature (°C)	Pressure (bar)	Liquid Density (g/cm ³)	Vapor Density (g/cm ³)	Liquid Enthalpy (J/g)	Vapor Enthalpy (J/g)	Liquid Entropy (J/g-K)	Vapor Entropy (J/g-K)
-20	1.500	1.237	0.0087	175.58	348.80	0.9077	1.5919
-18	1.624	1.231	0.0094	177.97	350.09	0.9171	1.5916
-16	1.755	1.226	0.0101	180.37	351.37	0.9264	1.5914
-14	1.895	1.220	0.0109	182.79	352.65	0.9357	1.5912
-12	2.042	1.214	0.0117	185.21	353.93	0.9450	1.5910
-10	2.199	1.208	0.0125	187.64	355.20	0.9542	1.5909
-8	2.365	1.202	0.0134	190.09	356.46	0.9634	1.5909
-6	2.540	1.196	0.0144	192.55	357.72	0.9726	1.5909
-4	2.724	1.190	0.0154	195.02	358.98	0.9818	1.5909
-2	2.919	1.184	0.0164	197.50	360.22	0.9909	1.5910
0	3.125	1.178	0.0176	200.00	361.46	1.0000	1.5911
2	3.341	1.172	0.0187	202.51	362.70	1.0091	1.5913
4	3.568	1.165	0.0200	205.03	363.92	1.0182	1.5915
6	3.807	1.159	0.0213	207.57	365.14	1.0272	1.5917
8	4.058	1.152	0.0227	210.12	366.35	1.0362	1.5919
10	4.321	1.146	0.0241	212.68	367.55	1.0452	1.5922
12	4.596	1.139	0.0256	215.26	368.74	1.0542	1.5924
14	4.885	1.133	0.0272	217.85	369.92	1.0632	1.5927
16	5.188	1.126	0.0289	220.46	371.09	1.0721	1.5931
18	5.504	1.119	0.0307	223.08	372.24	1.0811	1.5934
20	5.834	1.112	0.0325	225.72	373.39	1.0900	1.5937
22	6.179	1.105	0.0345	228.38	374.52	1.0989	1.5941
24	6.539	1.098	0.0365	231.05	375.64	1.1078	1.5944
26	6.915	1.090	0.0387	233.74	376.75	1.1167	1.5948
28	7.307	1.083	0.0410	236.44	377.84	1.1256	1.5952
30	7.715	1.076	0.0433	239.16	378.91	1.1345	1.5955
32	8.140	1.068	0.0458	241.91	379.97	1.1434	1.5959
34	8.582	1.060	0.0485	244.67	381.01	1.1523	1.5962
36	9.041	1.052	0.0512	247.45	382.03	1.1612	1.5965
38	9.519	1.044	0.0541	250.25	383.03	1.1701	1.5968
40	10.015	1.036	0.0572	253.07	384.01	1.1789	1.5971
42	10.531	1.028	0.0604	255.91	384.96	1.1878	1.5973
44	11.066	1.019	0.0638	258.78	385.89	1.1967	1.5975
46	11.621	1.010	0.0673	261.67	386.79	1.2057	1.5977
48	12.197	1.001	0.0711	264.59	387.67	1.2146	1.5978
50	12.794	0.992	0.0750	267.53	388.51	1.2235	1.5979
52	13.413	0.983	0.0792	270.50	389.32	1.2325	1.5979
54	14.054	0.973	0.0836	273.50	390.09	1.2415	1.5979
56	14.717	0.963	0.0883	276.53	390.83	1.2505	1.5978
58	15.404	0.953	0.0933	279.60	391.52	1.2596	1.5976
60	16.115	0.943	0.0986	282.70	392.17	1.2687	1.5973
62	16.851	0.932	0.1042	285.84	392.76	1.2779	1.5969
64	17.612	0.921	0.1101	289.02	393.30	1.2871	1.5964
66	18.399	0.909	0.1165	292.25	393.77	1.2964	1.5957
68	19.213	0.897	0.1234	295.53	394.18	1.3058	1.5949
70	20.054	0.884	0.1307	298.86	394.51	1.3152	1.5940
72	20.923	0.871	0.1387	302.25	394.75	1.3248	1.5928
74	21.822	0.857	0.1473	305.72	394.89	1.3345	1.5914
76	22.751	0.843	0.1567	309.26	394.92	1.3444	1.5897
78	23.710	0.827	0.1670	312.90	394.81	1.3544	1.5877
80	24.702	0.811	0.1783	316.64	394.53	1.3647	1.5853
82	25.728	0.793	0.1911	320.52	394.07	1.3753	1.5824
84	26.788	0.773	0.2055	324.57	393.35	1.3863	1.5789
86	27.884	0.751	0.2222	328.84	392.32	1.3978	1.5746
88	29.018	0.726	0.2420	333.42	390.83	1.4101	1.5691
90	30.193	0.696	0.2668	338.48	388.67	1.4236	1.5618
92	31.411	0.656	0.3010	344.43	385.24	1.4395	1.5512
94	32.681	0.588	0.3641	353.14	378.09	1.4627	1.5306
94.8	32.660	0.4709	0.4709	365.85	365.85	1.4970	1.4970