



R-134a

Technical Guidelines

Physical Properties of Refrigerants	R-134a
Environmental Classification	HFC
Molecular Weight	102.3
Boiling Point (1 atm, °F)	-14.9
Critical Pressure (psia)	588.3
Critical Temperature (°F)	213.8
Critical Density, (lb./ft ³)	32.0
Liquid Density (70 °F, lb./ft ³)	76.2
Vapor Density (bp, lb./ft ³)	0.328
Heat of Vaporization (bp, BTU/lb.)	93.3
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.3366
Specific Heat Vapor (1 atm, 70 °F, BTU/lb. °F)	0.2021
Ozone Depletion Potential (CFC 11 = 1.0)	0
Global Warming Potential (CO ₂ = 1.0)	1430
ASHRAE Standard 34 Safety Rating	A1

Available in the following sizes

- R-134a
- 12 oz. can
- 30 LB. CYLINDER
- 30 LB CYLINDER/with Automotive Fitting
- 125 LB. CYLINDER
- 1000 LB. CYLINDER
- 1750 LB. CYLINDER

Pressure-Temp Chart

Temp (°F)	R-134a psig
-40	14.8"
-35	12.5"
-30	9.9"
-25	6.9"
-20	3.7"
-15	0.6
-10	1.9
-5	4.0
0	6.5
5	9.1
10	11.9
15	15.0
20	18.4
25	22.1
30	26.1
35	30.4
40	35.0
45	40.1
50	45.5
55	51.3
60	57.5
65	64.1
70	71.2
75	78.8
80	86.8
85	95.4
90	104
95	114
100	124
105	135
110	147
115	159
120	171
125	185
130	199
135	214
140	229
145	246
150	263

R-134a

Replaces: R-12

Applications: Household appliances, refrigeration (commercial and self-contained equipment), centrifugal chillers and automotive air conditioning

Performance:

- Similar PT properties in air-conditioning
- Slight drop in capacity at lower temperature applications (below -10°F)

Lubricant

Recommendation: Compatible with polyolester lubricant for stationary equipment and polyalkaline glycol for automotive A/C systems

Retrofitting: Replacement for R-12 page 90, 91



THERMODYNAMIC PROPERTIES OF R-134a

Temp [°F]	Pressure Liquid [psia]	Density Liquid [lb/ft ³]	Density Vapor [lb/ft ³]	Enthalpy Liquid [Btu/lb]	Enthalpy Vapor [Btu/lb]	Entropy Liquid [Btu/R-lb]	Entropy Vapor [Btu/R-lb]
-60	4.0	90.49	0.09689	-5.957	94.13	-0.01452	0.2359
-55	4.7	90.00	0.1127	-4.476	94.89	-0.01085	0.2347
-50	5.5	89.50	0.1305	-2.989	95.65	-0.00720	0.2336
-45	6.4	89.00	0.1505	-1.498	96.41	-0.00358	0.2325
-40	7.4	88.50	0.1729	0.000	97.17	0.00000	0.2315
-35	8.6	88.00	0.1978	1.503	97.92	0.00356	0.2306
-30	9.9	87.49	0.2256	3.013	98.68	0.00708	0.2297
-25	11.3	86.98	0.2563	4.529	99.43	0.01058	0.2289
-20	12.9	86.47	0.2903	6.051	100.2	0.01406	0.2282
-15	15.3	85.95	0.3277	7.580	100.9	0.01751	0.2274
-10	16.6	85.43	0.3689	9.115	101.7	0.02093	0.2268
-5	18.8	84.90	0.4140	10.66	102.4	0.02433	0.2262
0	21.2	84.37	0.4634	12.21	103.2	0.02771	0.2256
5	23.8	83.83	0.5173	13.76	103.9	0.03107	0.2250
10	26.6	83.29	0.5761	15.33	104.6	0.03440	0.2245
15	29.7	82.74	0.6401	16.90	105.3	0.03772	0.2240
20	33.1	82.19	0.7095	18.48	106.1	0.04101	0.2236
25	36.8	81.63	0.7848	20.07	106.8	0.04429	0.2232
30	40.8	81.06	0.8663	21.67	107.5	0.04755	0.2228
35	45.1	80.49	0.9544	23.27	108.2	0.05079	0.2224
40	49.7	79.90	1.050	24.89	108.9	0.05402	0.2221
45	54.8	79.32	1.152	26.51	109.5	0.05724	0.2217
50	60.2	78.72	1.263	28.15	110.2	0.06044	0.2214
55	65.9	78.11	1.382	29.80	110.9	0.06362	0.2212
60	72.2	77.50	1.510	31.45	111.5	0.06680	0.2209
65	78.8	76.87	1.647	33.12	112.2	0.06996	0.2206
70	85.8	76.24	1.795	34.80	112.8	0.07311	0.2204
75	93.5	75.59	1.953	36.49	113.4	0.07626	0.2201
80	101.4	74.94	2.123	38.20	114.0	0.07939	0.2199
85	109.9	74.27	2.305	39.91	114.6	0.08252	0.2197
90	119.0	73.58	2.501	41.65	115.2	0.08565	0.2194
95	128.6	72.88	2.710	43.39	115.7	0.08877	0.2192
100	138.9	72.17	2.935	45.15	116.3	0.09188	0.2190
105	149.7	71.44	3.176	46.93	116.8	0.09500	0.2187
110	161.1	70.69	3.435	48.73	117.3	0.09811	0.2185
115	173.1	69.93	3.713	50.55	117.8	0.1012	0.2183
120	185.9	69.14	4.012	52.38	118.3	0.1044	0.2180
125	199.3	68.32	4.333	54.24	118.7	0.1075	0.2177
130	213.4	67.49	4.679	56.12	119.1	0.1106	0.2174
135	228.3	66.62	5.052	58.02	119.5	0.1138	0.2171
140	243.9	65.73	5.455	59.95	119.8	0.1169	0.2167
145	260.4	64.80	5.892	61.92	120.1	0.1201	0.2163
150	277.6	63.83	6.366	63.91	120.4	0.1233	0.2159
155	295.7	62.82	6.882	65.94	120.6	0.1265	0.2154
160	314.7	61.76	7.447	68.00	120.7	0.1298	0.2149