



# R-410A Technical Guidelines



Physical Properties of Refrigerants	R-410A
Environmental Classification	HFC
Molecular Weight	72.6
Boiling Point (1 atm, °F)	-61
Critical Pressure (psia)	691.8
Critical Temperature (°F)	158.3
Critical Density, (lb./ft <sup>3</sup> )	34.5
Liquid Density (70 °F, lb./ft <sup>3</sup> )	67.74
Vapor Density (bp, lb./ft <sup>3</sup> )	0.261
Heat of Vaporization (bp, BTU/lb.)	116.8
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.3948
Specific Heat Vapor (1 atm, 70 °F, BTU/lb. °F)	0.1953
Ozone Depletion Potential (CFC 11 = 1.0)	0
Global Warming Potential (CO <sub>2</sub> = 1.0)	2088
ASHRAE Standard 34 Safety Rating	A1
Temperature Glide (°F) (see section 2)	0.2

Available in the following size  
R-410A  
25lb. Cylinder only

**Pressure-Temp Chart**

Temp (°F)	R-410A psig
-40	11.6
-35	14.9
-30	18.5
-25	22.5
-20	26.9
-15	31.7
-10	36.8
-5	42.5
0	48.6
5	55.2
10	62.3
15	70.0
20	78.3
25	87.3
30	96.8
35	107
40	118
45	130
50	142
55	155
60	170
65	185
70	201
75	217
80	235
85	254
90	274
95	295
100	317
105	340
110	365
115	391
120	418
125	446
130	476
135	507
140	539
145	573
150	608

**R-410A** (R-32/125)  
(50 / 50 wt%)

Replaces: R-22

Applications: Air conditioning equipment and heat pumps. Only for newly manufactured equipment, not for retrofitting R-22 systems

Performance: Pressures are 60% higher than R-22, therefore should be used only in new equipment

Lubricant

Recommendation: Compatible with polyolester lubricant

Retrofitting: For new equipment only



## THERMODYNAMIC PROPERTIES OF R-410A

<u>Temp</u> [°F]	<u>Pressure</u> Liquid [psia]	<u>Pressure</u> Vapor [psia]	<u>Density</u> Liquid [lb/ft <sup>3</sup> ]	<u>Density</u> Vapor [lb/ft <sup>3</sup> ]	<u>Enthalpy</u> Liquid [Btu/lb]	<u>Enthalpy</u> Vapor [Btu/lb]	<u>Entropy</u> Liquid [Btu/R-lb]	<u>Entropy</u> Vapor [Btu/R-lb]
-40	25.6	25.5	82.02	0.4384	0.000	112.5	0.00000	0.2682
-35	28.9	28.9	81.45	0.4929	1.648	113.1	0.00389	0.2664
-30	32.6	32.6	80.88	0.5526	3.303	113.7	0.00774	0.2647
-25	36.7	36.6	80.30	0.6179	4.967	114.3	0.01157	0.2631
-20	41.1	41.0	79.71	0.6892	6.640	114.8	0.01537	0.2615
-15	46.0	45.8	79.12	0.7669	8.321	115.4	0.01915	0.2599
-10	51.2	51.1	78.51	0.8514	10.01	115.9	0.02290	0.2584
-5	56.9	56.8	77.91	0.9431	11.71	116.4	0.02663	0.2570
0	63.1	63.0	77.29	1.043	13.42	116.9	0.03035	0.2555
5	69.8	69.7	76.66	1.151	15.15	117.4	0.03404	0.2541
10	77.1	76.9	76.03	1.267	16.88	117.9	0.03771	0.2528
15	84.9	84.6	75.38	1.394	18.63	118.3	0.04137	0.2514
20	93.2	93.0	74.73	1.530	20.39	118.8	0.04502	0.2501
25	102.2	101.9	74.06	1.677	22.16	119.2	0.04865	0.2488
30	111.9	111.5	73.38	1.836	23.95	119.6	0.05227	0.2476
35	122.2	121.8	72.69	2.007	25.75	119.9	0.05588	0.2463
40	133.2	132.8	71.99	2.192	27.58	120.3	0.05949	0.2451
45	144.9	144.5	71.27	2.391	29.41	120.6	0.06309	0.2438
50	157.4	156.9	70.53	2.606	31.27	120.9	0.06668	0.2426
55	170.7	170.2	69.78	2.838	33.14	121.2	0.07028	0.2413
60	184.8	184.3	69.01	3.088	35.04	121.4	0.07387	0.2401
65	199.8	199.2	68.22	3.357	36.96	121.6	0.07747	0.2388
70	215.7	215.1	67.41	3.648	38.90	121.8	0.08107	0.2376
75	232.5	231.8	66.58	3.963	40.87	121.9	0.08469	0.2363
80	250.3	249.6	65.71	4.304	42.87	122.0	0.08832	0.2350
85	269.1	268.3	64.82	4.674	44.90	122.0	0.09196	0.2336
90	289.0	288.2	63.90	5.075	46.96	122.0	0.09562	0.2322
95	310.0	309.1	62.95	5.513	49.06	122.0	0.09932	0.2308
100	332.0	331.1	61.95	5.990	51.21	121.8	0.1030	0.2293
105	355.3	354.3	60.90	6.513	53.39	121.6	0.1068	0.2277
110	379.8	378.8	59.81	7.089	55.63	121.4	0.1106	0.2261
115	405.6	404.5	58.65	7.725	57.93	121.0	0.1145	0.2243
120	432.7	431.6	57.42	8.434	60.30	120.5	0.1185	0.2224
125	461.2	460.1	56.11	9.230	62.76	119.9	0.1225	0.2203
130	491.2	490.1	54.68	10.13	65.31	119.2	0.1267	0.2180
135	522.7	521.6	53.12	11.17	67.99	118.2	0.1310	0.2155
140	555.9	554.8	51.38	12.40	70.84	117.0	0.1356	0.2125