



R-414B

Technical Guidelines

Physical Properties of Refrigerants	R-414B
Environmental Classification	HCFC
Molecular Weight	101.6
Boiling Point (1 atm, °F)	-29.9
Critical Pressure (psia)	665.4
Critical Temperature (°F)	226.4
Critical Density, (lb./ft ³)	31.6
Liquid Density (70 °F, lb./ft ³)	76.02
Vapor Density (bp, lb./ft ³)	0.325
Heat of Vaporization (bp, BTU/lb.)	91.5
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.2913
Specific Heat Vapor (1 atm, 70 °F, BTU/lb. °F)	0.1723
Ozone Depletion Potential (CFC 11 = 1.0)	0.043
Global Warming Potential (CO ₂ = 1.0)	1365
ASHRAE Standard 34 Safety Rating	A1
Temperature Glide (°F) (see section 2)	13

Available in the following sizes

R-414B
25 LB. CYLINDER

R-414B

(R-22 /124 /600a /142b)
(50 / 39 / 1.5 / 9.5 wt%)

Replaces: R-12 and R-500

Applications: Medium and low temperature commercial and industrial direct expansion refrigeration and stationary and automotive air-conditioning

Performance:

- Pressure and capacity match R-12 in 30°F to 40°F evaporators
- Slightly higher discharge pressure

Lubricant

Recommendation: Compatible with mineral oil, alkylbenzene and polyolester lubricant

Retrofitting:

from R-12	page 90, 92
from R-500	page 97

Pressure-Temp Chart

Temp (°F)	R-414B	
	Liquid (psig)	Vapor (psig)
-30	0.0	9.7"
-25	1.9	6.8"
-20	4.0	3.6"
-15	6.3	0.0
-10	8.8	2.0
-5	11.5	4.1
0	14.5	6.5
5	17.7	9.0
10	21.2	11.9
15	25.0	14.9
20	29.0	18.3
25	33.4	21.9
30	38.1	25.8
35	43.1	30.0
40	48.5	34.6
45	54.3	39.5
50	60.4	44.8
55	67.0	50.4
60	73.9	56.5
65	81.3	62.9
70	89.1	69.8
75	97.4	77.1
80	106	85.0
85	116	93.3
90	125	102
95	136	111
100	146	121
105	158	132
110	170	143
115	183	155
120	196	167
125	210	180
130	224	193
135	239	208
140	255	223
145	272	239
150	289	255



THERMODYNAMIC PROPERTIES OF R-414B

Temp [°F]	Pressure Liquid [psia]	Pressure Vapor [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]
-40	11.4	7.5	87.77	0.1727	0.000	90.85	0.00000	0.2212
-35	12.9	8.6	87.29	0.1973	1.298	91.51	0.00307	0.2200
-30	14.7	9.9	86.81	0.2247	2.601	92.17	0.00611	0.2189
-25	16.6	11.4	86.32	0.2549	3.909	92.83	0.00913	0.2179
-20	18.7	12.9	85.83	0.2883	5.222	93.48	0.01212	0.2169
-15	21.0	14.7	85.33	0.3250	6.542	94.13	0.01509	0.2159
-10	23.5	16.7	84.83	0.3652	7.867	94.78	0.01804	0.2151
-5	26.2	18.8	84.32	0.4093	9.198	95.43	0.02098	0.2142
0	29.2	21.2	83.81	0.4573	10.54	96.07	0.02389	0.2134
5	32.4	23.7	83.30	0.5097	11.88	96.71	0.02678	0.2127
10	35.9	26.6	82.78	0.5666	13.23	97.34	0.02966	0.2119
15	39.7	29.6	82.25	0.6284	14.59	97.97	0.03251	0.2112
20	43.7	33.0	81.72	0.6953	15.96	98.59	0.03536	0.2106
25	48.1	36.6	81.18	0.7677	17.33	99.21	0.03818	0.2100
30	52.8	40.5	80.64	0.8458	18.71	99.82	0.04100	0.2094
35	57.8	44.7	80.09	0.9300	20.10	100.4	0.04379	0.2088
40	63.2	49.3	79.53	1.021	21.49	101.0	0.04658	0.2083
45	69.0	54.2	78.96	1.118	22.90	101.6	0.04935	0.2078
50	75.1	59.5	78.39	1.223	24.32	102.2	0.05211	0.2073
55	81.7	65.1	77.81	1.335	25.74	102.8	0.05486	0.2068
60	88.6	71.2	77.23	1.456	27.17	103.3	0.05760	0.2063
65	96.0	77.6	76.63	1.585	28.62	103.9	0.06033	0.2059
70	103.8	84.5	76.02	1.723	30.07	104.4	0.06305	0.2055
75	112.1	91.8	75.41	1.871	31.53	105.0	0.06577	0.2051
80	120.9	99.7	74.78	2.029	33.01	105.5	0.06847	0.2047
85	130.2	108.0	74.15	2.198	34.50	106.0	0.07117	0.2043
90	140.0	116.8	73.50	2.379	35.99	106.5	0.07387	0.2039
95	150.3	126.1	72.84	2.572	37.51	107.0	0.07656	0.2035
100	161.1	136.0	72.17	2.778	39.03	107.5	0.07924	0.2031
105	172.5	146.5	71.48	2.998	40.57	107.9	0.08193	0.2027
110	184.6	157.5	70.78	3.233	42.12	108.4	0.08461	0.2024
115	197.2	169.2	70.06	3.484	43.69	108.8	0.08729	0.2020
120	210.4	181.5	69.33	3.753	45.28	109.2	0.08998	0.2016
125	224.2	194.4	68.57	4.040	46.88	109.6	0.09267	0.2012
130	238.7	208.1	67.80	4.348	48.50	110.0	0.09536	0.2008
135	253.9	222.4	67.00	4.677	50.14	110.3	0.09806	0.2004
140	269.7	237.5	66.18	5.031	51.80	110.6	0.1008	0.1999
145	286.3	253.3	65.34	5.412	53.49	110.9	0.1035	0.1995
150	303.6	270.0	64.46	5.821	55.20	111.1	0.1062	0.1990
155	321.7	287.4	63.55	6.263	56.94	111.4	0.1090	0.1984
160	340.5	305.7	62.60	6.741	58.71	111.5	0.1118	0.1979