



R-422B and R-422D

Technical Guidelines

Physical Properties of Refrigerants	R-422B	R-422D
Environmental Classification	HFC	HFC
Molecular Weight	108.5	109.9
Boiling Point (1 atm, °F)	-42.4	-45.8
Critical Pressure (psia)	574.1	566.2
Critical Temperature (°F)	181.8	175.2
Critical Density, (lb./ft ³)	32.9	33.0
Liquid Density (70 °F, lb./ft ³)	73.05	70.9
Vapor Density (bp, lb./ft ³)	0.363	0.372
Heat of Vaporization (bp, BTU/lb.)	84.2	81.8
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.3385	0.339
Specific Heat Vapor (1 atm, 70 °F, BTU/lb. °F)	0.201	0.20
Ozone Depletion Potential (CFC 11 = 1.0)	0	0
Global Warming Potential (CO ₂ = 1.0)	2525	2730
ASHRAE Standard 34 Safety Rating	A1	A1
Temperature Glide (°F) (see section 2)	5	5

Available in the following sizes

R-422D
25 LB. CYLINDER
110 LB. CYLINDER

Pressure-Temp Chart

R-422B

(R-125 /134a /600a)
(55 / 42 / 3 wt%)

Replaces:

R-22

Applications:

- R-422B: Medium temperature commercial and industrial direct expansion refrigeration and A/C
- R-422D: Medium and low temperature commercial and industrial direct expansion refrigeration

Performance:

- Slightly lower discharge temperature
- Possible undersized TXV based on pressure drop
- Up to 10% lower capacity

Lubricant

Recommendation: Compatible with mineral and alkylbenzene oil and if oil return becomes a concern, addition of polyolester lubricant in 5% increments could help resolve the issue

Retrofitting to:

- R-422B for R-22 Air Conditioning page 95
- R-422B for R-22 Refrigeration page 95
- R-422D for R-22 Refrigeration page 95

R-422B		Temp (°F)	R-422D	
Liquid (psig)	Vapor (psig)		Liquid (psig)	Vapor (psig)
0.9	2.7"	-40	2.4	2.3"
3.0	0.9"	-35	4.6	0.8
5.4	1.1	-30	7.1	3.0
7.9	3.2	-25	9.9	5.4
10.7	5.7	-20	12.9	8.1
13.8	8.3	-15	16.2	11.0
17.1	11.3	-10	19.8	14.3
20.7	14.5	-5	23.7	17.8
24.7	18.0	0	27.9	21.7
29.0	21.9	5	32.5	25.8
33.6	26.1	10	37.5	30.4
38.6	30.6	15	42.8	35.3
43.9	35.5	20	48.5	40.7
49.7	40.8	25	54.7	46.4
55.9	46.6	30	61.3	52.6
62.5	52.7	35	68.4	59.3
69.6	59.4	40	75.9	66.4
77.2	66.5	45	84.0	74.0
85.3	74.1	50	92.6	82.2
94	82.2	55	102	90.9
103	90.9	60	111	100
113	100	65	122	110
123	110	70	133	121
134	120	75	144	132
145	132	80	156	144
158	143	85	169	156
170	156	90	183	170
184	169	95	197	184
198	183	100	212	198
213	198	105	228	214
229	213	110	245	231
246	230	115	262	248
263	247	120	281	266
281	265	125	300	286
301	284	130	320	306
321	304	135	341	327
342	326	140	364	350



THERMODYNAMIC PROPERTIES OF R-422D

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]
-60	10.0	7.5	89.08	0.20	-5.756	76.71	-0.01402	0.1951
-55	11.5	8.8	88.53	0.23	-4.326	77.45	-0.01047	0.1943
-50	13.1	10.2	87.98	0.26	-2.890	78.19	-0.00695	0.1935
-45	15.0	11.8	87.42	0.30	-1.448	78.92	0.00346	0.1928
-40	17.1	13.5	86.86	0.34	0.000	79.65	0.00000	0.1921
-35	19.3	15.5	86.30	0.39	1.455	80.39	0.00343	0.1915
-30	21.8	17.7	85.73	0.44	2.916	81.11	0.00684	0.1909
-25	24.6	20.1	85.15	0.50	4.384	81.84	0.01023	0.1904
-20	27.6	22.8	84.57	0.56	5.860	82.56	0.01359	0.1899
-15	30.9	25.7	83.98	0.63	7.343	83.27	0.01693	0.1894
-10	34.5	29.0	83.39	0.71	8.835	83.98	0.02024	0.1890
-5	38.4	32.5	82.79	0.79	10.34	84.69	0.02354	0.1886
0	42.6	36.3	82.18	0.88	11.84	85.39	0.02682	0.1883
5	47.2	40.5	81.56	0.98	13.36	86.08	0.03008	0.1880
10	52.2	45.1	80.93	1.08	14.89	86.77	0.03332	0.1877
15	57.5	50.0	80.30	1.20	16.42	87.45	0.03655	0.1874
20	63.2	55.4	79.66	1.32	17.97	88.12	0.03977	0.1872
25	69.4	61.1	79.00	1.46	19.53	88.78	0.04297	0.1870
30	76.0	67.3	78.34	1.60	21.10	89.43	0.04615	0.1868
35	83.1	74.0	77.66	1.76	22.68	90.08	0.04933	0.1866
40	90.6	81.1	76.97	1.93	24.27	90.71	0.05250	0.1864
45	98.7	88.7	76.27	2.11	25.87	91.33	0.05565	0.1863
50	107	96.9	75.55	2.30	27.49	91.93	0.05880	0.1861
55	116	106	74.82	2.52	29.12	92.53	0.06194	0.1860
60	126	115	74.07	2.74	30.77	93.10	0.06508	0.1858
65	136	125	73.30	2.99	32.43	93.66	0.06822	0.1857
70	147	135	72.52	3.25	34.11	94.21	0.07135	0.1855
75	159	147	71.71	3.54	35.81	94.73	0.07448	0.1853
80	171	158	70.88	3.84	37.53	95.23	0.07762	0.1852
85	184	171	70.03	4.18	39.26	95.70	0.08076	0.1850
90	197	184	69.15	4.53	41.02	96.16	0.08391	0.1848
95	212	198	68.23	4.92	42.80	96.58	0.08706	0.1845
100	227	213	67.29	5.34	44.61	96.97	0.09023	0.1843
105	243	229	66.31	5.80	46.44	97.32	0.09342	0.1840
110	259	245	65.28	6.30	48.31	97.64	0.09662	0.1836
115	277	263	64.21	6.84	50.21	97.91	0.09986	0.1832
120	295	281	63.08	7.44	52.15	98.14	0.1031	0.1828
125	315	300	61.89	8.09	54.13	98.30	0.1064	0.1823
130	335	321	60.63	8.82	56.16	98.40	0.1098	0.1817
135	356	342	59.28	9.63	58.25	98.42	0.1132	0.1810
140	378	364	57.82	10.55	60.41	98.35	0.1167	0.1802