R-500 and R-502

Physical Properties of Refrigerants	R-500	R-502
Environmental Classification	CFC	CFC
Molecular Weight	99.3	111.6
Boiling Point (1 atm, ˚F)	-28.5	-49.5
Critical Pressure (psia)	605.2	582.8
Critical Temperature (˚F)	215.8	177.3
Critical Density, (lb./ft^ 3)	30.7	35.5
Liquid Density (70 ˚F, lb./ft ^ 3)	73	77
Vapor Density (bp, lb./ft ^ 3)	0.329	0.388
Heat of Vaporization (bp, BTU/lb.)	86.4	74.2
Specific Heat Liquid (70 ˚F, BTU/lb. ˚F)	0.2782	0.2958
Specific Heat Vapor (1 atm, 70 ˚F, BTU/lb. ˚F)	0.1725	0.1641
Ozone Depletion Potential (CFC 11 = 1.0)	0.66	0.23
Global Warming Potential (CO_2 = 1.0)	8077	4657
ASHRAE Standard 34 Safety Rating	A1	A1

Available in the following sizes

R-500
30 LB. CYLINDER
125 LB. CYLINDER

R-502
30 LB. CYLINDER
125 LB. CYLINDER

R-500

(R-12/152a)
(73.8 / 26.2 wt%)

Application: Air conditioning, dehumidifiers and centrifugal chillers

Lubricant Recommendation: Compatible with mineral and alkylbenzene oil

Retrofitting to:

R-134a	consult equipment manufacturer
R-401A, R-401B	page 97
R-409A	page 97
R-414B	page 97

R-502

(R-22/115)
(48.8 / 51.2 wt%)

Application: Low temperature commercial and industrial direct expansion refrigeration and ice machines

Lubricant Recommendation: Compatible with mineral and alkylbenzene oil

Retrofitting to:

R-402A, R-402B	page 98
R-404A, R-507	page 99
R-408A	page 98
R-422C	page 100

Pressure-Temp Chart

R-500 (psig)	Temp (˚F)	R-502 (psig)
7.6"	**-40**	4.1
4.6"	**-35**	6.5
1.2"	**-30**	9.2
1.2	**-25**	12.1
3.2	**-20**	15.3
5.4	**-15**	18.8
7.8	**-10**	22.6
10.4	**-5**	26.7
13.3	**0**	31.1
16.4	**5**	35.9
19.7	**10**	41.0
23.4	**15**	46.5
27.3	**20**	52.4
31.5	**25**	58.8
36.0	**30**	65.6
40.9	**35**	72.8
46.1	**40**	80.5
51.6	**45**	88.7
57.6	**50**	97.4
63.9	**55**	107
70.6	**60**	116
77.8	**65**	127
85.4	**70**	138
93.5	**75**	149
102	**80**	161
111	**85**	174
121	**90**	187
131	**95**	201
141	**100**	216
152	**105**	232
164	**110**	248
177	**115**	265
189	**120**	283
203	**125**	301
217	**130**	321
232	**135**	341
248	**140**	363

THERMODYNAMIC PROPERTIES OF R-502

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	11.1	10.9	93.91	0.2941	-4.736	70.99	-0.01153	0.1781
-55	12.7	12.5	93.35	0.3342	-3.561	71.59	-0.00861	0.1772
-50	14.5	14.3	92.78	0.3786	-2.380	72.18	-0.00572	0.1764
-45	16.5	16.3	92.20	0.4273	-1.193	72.77	-0.00285	0.1756
-40	18.7	18.5	91.62	0.4808	0.000	73.36	0.00000	0.1749
-35	21.1	20.9	91.04	0.5394	1.200	73.95	0.00283	0.1742
-30	23.7	23.5	90.45	0.6034	2.406	74.53	0.00564	0.1736
-25	26.6	26.4	89.85	0.6731	3.619	75.11	0.00843	0.1730
-20	29.8	29.6	89.25	0.7490	4.839	75.68	0.01121	0.1724
-15	33.2	33.0	88.64	0.8313	6.066	76.25	0.01397	0.1719
-10	37.0	36.8	88.03	0.9205	7.301	76.81	0.01671	0.1713
-5	41.0	40.8	87.40	1.017	8.544	77.37	0.01944	0.1709
0	45.4	45.2	86.78	1.121	9.795	77.92	0.02216	0.1704
5	50.1	50.0	86.14	1.234	11.05	78.47	0.02486	0.1700
10	55.2	55.1	85.49	1.355	12.32	79.00	0.02755	0.1696
15	60.7	60.6	84.84	1.486	13.60	79.53	0.03023	0.1692
20	66.6	66.5	84.17	1.626	14.89	80.06	0.03290	0.1688
25	72.9	72.8	83.50	1.777	16.18	80.57	0.03556	0.1684
30	79.6	79.5	82.82	1.939	17.49	81.07	0.03821	0.1681
35	86.8	86.7	82.12	2.113	18.80	81.57	0.04085	0.1677
40	94.5	94.4	81.42	2.299	20.13	82.05	0.04348	0.1674
45	102.7	102.6	80.70	2.499	21.47	82.52	0.04611	0.1671
50	111.4	111.3	79.97	2.712	22.82	82.98	0.04874	0.1668
55	120.6	120.5	79.22	2.942	24.18	83.43	0.05135	0.1665
60	130.4	130.3	78.46	3.187	25.56	83.86	0.05397	0.1662
65	140.7	140.7	77.68	3.450	26.95	84.28	0.05658	0.1659
70	151.7	151.6	76.88	3.731	28.35	84.68	0.05920	0.1656
75	163.3	163.2	76.07	4.033	29.77	85.07	0.06181	0.1652
80	175.5	175.4	75.23	4.357	31.20	85.43	0.06442	0.1649
85	188.4	188.3	74.37	4.705	32.66	85.78	0.06704	0.1646
90	201.9	201.9	73.49	5.079	34.13	86.10	0.06967	0.1642
95	216.2	216.2	72.58	5.481	35.62	86.40	0.07230	0.1639
100	231.3	231.2	71.64	5.914	37.13	86.67	0.07495	0.1635
105	247.1	247.0	70.66	6.382	38.67	86.91	0.07761	0.1630
110	263.6	263.6	69.65	6.889	40.23	87.11	0.08029	0.1626
115	281.0	281.0	68.59	7.438	41.82	87.28	0.08298	0.1621
120	299.3	299.3	67.48	8.037	43.44	87.41	0.08571	0.1616
125	318.4	318.4	66.32	8.692	45.10	87.49	0.08847	0.1610
130	338.5	338.5	65.08	9.412	46.80	87.51	0.09127	0.1603
135	359.5	359.5	63.77	10.21	48.55	87.47	0.09412	0.1596
140	381.4	381.4	62.36	11.10	50.36	87.35	0.09704	0.1587