



R-452A

R-452A

Composition: R-32/125/1234yf (11.0/59.0/30.0 %)

Application:

Medium and low temp refrigeration: transport refrigeration and remote condensing units (EPA SNAP approved applications)

Performance:

Similar capacity and efficiency to R-404A/R-507

Lubricant:

R-452A requires polyolester (POE) lubricant

Retrofitting:

- Consult the comments on Pages 9 and 10
- See Section II, pages 92-98 for detailed discussion

[PRESSURE-TEMP CHART]

R452A		
TEMP. (°F)	Liquid (psig)	Vapor (psig)
-40	5.7	2.4
-35	8.5	4.7
-30	11.4	7.3
-25	14.7	10.2
-20	18.2	13.3
-15	22.1	16.7
-10	26.4	20.4
-5	31.0	24.4
0	35.9	28.8
5	41.3	33.6
10	47.1	38.8
15	53.4	44.4
20	60.1	50.4
25	67.3	56.9
30	75.0	63.8
35	83.2	71.3
40	92.0	79.2
45	101	87.8
50	111	96.9
55	122	107
60	133	117
65	145	128
70	157	140
75	171	152
80	185	165
85	199	179
90	215	194
95	231	209
100	248	226
105	267	243
110	286	261
115	305	281
120	326	301
125	348	322
130	371	345
135	395	369
140	420	394

[PHYSICAL PROPERTIES OF REFRIGERANTS]

	National R-452A
Environmental Classification	HFC / HFO
Molecular Weight	103.5
Boiling Point (1atm, °F)	-52.6
Critical Pressure (psia)	580.4
Critical Temperature (°F)	166.8
Critical Density (lb./ft ³)	30.98
Liquid Density (70 °F, lb./ft ³)	71.7
Vapor Density (bp, lb./ft ³)	0.305
Heat of Vaporization (bp, BTU/lb.)	83.04
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.344
Specific Heat Vapor (1atm, 70 °F, BTU/lb. °F)	0.198
Ozone Depletion Potential (CFC 11 = 1.0)	0
Global Warming Potential (CO ₂ = 1.0)	1945
ASHRAE Standard 34 Safety Rating	A1
Temperature Glide (°F) (see section 2)	5.5

[AVAILABLE IN SIZES]

REFRIGERANT

R-452A

Type

Cylinder

Size

25 lb.

100 lb.



Thermodynamic Properties of R-452A

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	10.6	9.1	88.71	0.3312	-5.681	78.20	-0.01648	0.1985
-55	12.8	10.8	88.18	0.3574	-4.281	78.97	-0.01281	0.1977
-50	15.1	12.7	87.65	0.3870	-2.871	79.74	-0.00915	0.1969
-45	17.5	14.7	87.11	0.4206	-1.451	80.49	-0.00551	0.1962
-40	20.4	17.1	86.59	0.4129	0.000	81.32	0.00000	0.1956
-35	23.2	19.4	86.01	0.4657	1.440	82.02	0.00340	0.1949
-30	26.1	22.0	85.42	0.5238	2.890	82.72	0.00678	0.1943
-25	29.4	24.9	84.83	0.5874	4.350	83.41	0.01014	0.1937
-20	32.9	28.0	84.24	0.6569	5.820	84.10	0.01348	0.1932
-15	36.8	31.4	83.63	0.7328	7.290	84.79	0.01680	0.1927
-10	41.1	35.1	83.02	0.8155	8.780	85.47	0.02010	0.1922
-5	45.7	39.1	82.40	0.9054	10.28	86.14	0.02339	0.1917
0	50.6	43.5	81.77	1.003	11.78	86.80	0.02666	0.1913
5	56.0	48.3	81.13	1.109	13.30	87.46	0.02991	0.1909
10	61.8	53.5	80.49	1.223	14.83	88.12	0.03315	0.1906
15	68.1	59.1	79.83	1.347	16.37	88.76	0.03638	0.1902
20	74.8	65.1	79.16	1.481	17.92	89.39	0.03960	0.1899
25	82.0	71.6	78.48	1.626	19.48	90.02	0.04281	0.1896
30	89.7	78.5	77.79	1.782	21.06	90.63	0.04600	0.1893
35	97.9	86.0	77.09	1.950	22.64	91.23	0.04919	0.1890
40	106.7	93.9	76.37	2.131	24.25	91.82	0.05237	0.1888
45	116.0	102.5	75.64	2.326	25.86	92.40	0.05555	0.1885
50	125.9	111.6	74.89	2.536	27.50	92.96	0.05872	0.1882
55	136.5	121.3	74.13	2.762	29.15	93.51	0.06188	0.1880
60	147.7	131.6	73.34	3.006	30.81	94.03	0.06505	0.1877
65	159.5	142.6	72.54	3.269	32.49	94.54	0.06821	0.1875
70	172.1	154.3	71.71	3.552	34.19	95.03	0.07138	0.1872
75	185.4	166.7	70.87	3.858	35.91	95.49	0.07455	0.1869
80	199.3	179.8	70.00	4.187	37.65	95.93	0.07772	0.1866
85	214.1	193.7	69.10	4.544	39.42	96.34	0.08090	0.1862
90	229.6	208.4	68.17	4.930	41.21	96.72	0.08409	0.1859
95	246.0	224.0	67.20	5.348	43.02	97.07	0.08930	0.1855
100	263.2	240.4	66.20	5.803	44.87	97.38	0.09052	0.1851
105	281.3	257.7	65.16	6.299	46.74	97.64	0.09377	0.1846
110	300.2	276.1	64.06	6.840	48.65	97.87	0.09704	0.1841
115	320.1	295.4	62.92	7.435	50.61	98.03	0.1004	0.1835
120	340.9	315.7	61.70	8.091	52.60	98.14	0.1037	0.1828
125	362.7	337.2	60.41	8.818	54.65	98.18	0.1071	0.1821
130	385.5	359.8	59.02	9.632	56.77	98.13	0.1106	0.1812
135	409.3	383.7	57.51	10.55	58.96	97.98	0.1142	0.1802
140	434.2	408.9	55.85	11.60	61.24	97.70	0.1179	0.1791
145	460.2	435.6	53.99	12.83	63.66	97.25	0.1217	0.1776
150	487.3	463.8	51.84	14.31	66.25	96.56	0.1258	0.1759