



# R-402A and R-402B

## R-402A

**Composition:** (R-125 / 290 / 22) • (60 / 2 / 38 wt%)

**Replaces:** R-502

**Application:** Low temperature commercial and industrial refrigeration

**Performance:**

Lower discharge temperature, higher discharge pressure

**Lubricant:**

Compatible with mineral oil, alkylbenzene, or polyolester.

**Retrofitting:**

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

## R-402B

**Composition:** (R-125 / 290 / 22) • (38 / 2 / 60 wt%)

**Replaces:** R-502

**Application:** Ice Machines

**Performance:**

Higher discharge temperature, lower discharge pressure

**Lubricant:**

Compatible with mineral oil, alkylbenzene, or polyolester.

**Retrofitting:**

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

[ PRESSURE-TEMP CHART ]

R-402A psig	TEMP. (°F)	R-402B psig
6.3	-40	3.6
9.1	-35	6.0
12.1	-30	9.0
15.4	-25	12.0
18.9	-20	15.4
22.9	-15	18.6
27.1	-10	22.6
31.7	-5	27.0
36.7	0	31.0
42.1	5	36.0
48.0	10	42.0
54.2	15	47.0
60.9	20	54.0
68.1	25	60.0
75.8	30	67.0
84.0	35	75.0
92.8	40	83.4
102	45	91.6
112	50	100
123	55	110
134	60	120
146	65	133
158	70	143
171	75	155
185	80	170
200	85	183
215	90	198
232	95	213
249	100	230
267	105	247
286	110	262
305	115	283
326	120	303
347	125	323
370	130	345
393	135	367
418	140	391
443	145	-
470	150	-

[ PHYSICAL PROPERTIES OF REFRIGERANTS ]

	National R-402A	National R-402B
Environmental Classification	HCFC	HCFC
Molecular Weight	101.6	94.7
Boiling Point (1atm, °F)	-56.5	-52.9
Critical Pressure (psia)	600	645
Critical Temperature (°F)	168	180.7
Critical Density (lb./ft <sup>3</sup> )	33.8	33.1
Liquid Density (70 °F, lb./ft <sup>3</sup> )	72.61	72.81
Vapor Density (bp, lb./ft <sup>3</sup> )	0.356	0.328
Heat of Vaporization (bp, BTU/lb.)	83.58	90.42
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.3254	0.317
Specific Heat Vapor (1atm, 70 °F, BTU/lb. °F)	0.1811	0.1741
Ozone Depletion Potential (CFC 11 = 1.0)	0.019	0.03
Global Warming Potential (CO2 = 1.0)	2788	2416
ASHRAE Standard 34 Safety Rating	A1	A1
Temperature Glide (°F) (see section 2)	2.5	2.5

[ AVAILABLE IN SIZES ]

REFRIGERANT	Type	Size
R-402A	Cylinder	27 lb.
		110 lb.
R-402B	Cylinder	13 lb.



# Thermodynamic Properties of R-402B

TEMP. (°F)	Pressure Liquid (psia)	Pressure Vapor (psia)	Density Liquid (lb/ft <sup>3</sup> )	Density Vapor (lb/ft <sup>3</sup> )	Enthalpy Liquid (Btu/lb)	Enthalpy Vapor (Btu/lb)	Entropy Liquid (Btu/R-lb)	Entropy Vapor (Btu/R-lb)
-60	12.2	10.8	88.76	0.2454	-5.366	85.51	-0.01306	0.2154
-55	13.9	12.4	88.23	0.2798	-4.033	86.14	-0.00975	0.2141
-50	15.9	14.2	87.70	0.3178	-2.694	86.76	-0.00647	0.2129
-45	18.0	16.2	87.16	0.3598	-1.350	87.38	-0.00322	0.2117
-40	20.4	18.5	86.62	0.4061	0.000	87.99	0.00000	0.2106
-35	23.0	20.9	86.07	0.4568	1.356	88.61	0.00320	0.2095
-30	25.9	23.6	85.52	0.5124	2.719	89.21	0.00638	0.2085
-25	29.1	26.6	84.96	0.5731	4.089	89.81	0.00953	0.2075
-20	32.5	29.9	84.40	0.6392	5.466	90.40	0.01266	0.2066
-15	36.2	33.4	83.83	0.7112	6.850	90.99	0.01577	0.2057
-10	40.3	37.3	83.25	0.7894	8.242	91.57	0.01887	0.2049
-5	44.7	41.5	82.67	0.8742	9.643	92.15	0.02194	0.2041
0	49.5	46.1	82.08	0.9659	11.05	92.71	0.02500	0.2033
5	54.7	51.1	81.48	1.065	12.47	93.27	0.02804	0.2025
10	60.2	56.4	80.88	1.172	13.89	93.82	0.03107	0.2018
15	66.2	62.2	80.26	1.287	15.33	94.36	0.03408	0.2011
20	72.6	68.3	79.64	1.412	16.78	94.89	0.03708	0.2005
25	79.4	75.0	79.01	1.545	18.23	95.41	0.04006	0.1998
30	86.7	82.1	78.37	1.689	19.70	95.92	0.04304	0.1992
35	94.6	89.7	77.72	1.843	21.18	96.42	0.04600	0.1986
40	102.9	97.8	77.05	2.008	22.67	96.91	0.04896	0.1980
45	111.8	106.5	76.38	2.186	24.17	97.38	0.05191	0.1974
50	121.2	115.7	75.69	2.376	25.68	97.84	0.05485	0.1968
55	131.2	125.5	74.99	2.580	27.21	98.29	0.05778	0.1963
60	141.9	136.0	74.28	2.798	28.75	98.71	0.06071	0.1957
65	153.1	147.0	73.55	3.032	30.31	99.13	0.06364	0.1952
70	165.0	158.7	72.81	3.283	31.88	99.52	0.06657	0.1946
75	177.6	171.1	72.05	3.552	33.47	99.89	0.06949	0.1940
80	190.8	184.1	71.27	3.840	35.08	100.2	0.07242	0.1935
85	204.8	197.9	70.47	4.149	36.70	100.6	0.07535	0.1929
90	219.5	212.5	69.64	4.482	38.35	100.9	0.07828	0.1923
95	235.0	227.8	68.80	4.839	40.01	101.2	0.08123	0.1917
100	251.3	243.9	67.92	5.224	41.70	101.4	0.08418	0.1911
105	268.4	260.9	67.02	5.638	43.42	101.6	0.08715	0.1904
110	286.3	278.7	66.08	6.086	45.16	101.8	0.09013	0.1898
115	305.2	297.4	65.11	6.572	46.94	101.9	0.09314	0.1891
120	324.9	317.1	64.09	7.099	48.74	102.0	0.09617	0.1883
125	345.6	337.7	63.03	7.674	50.59	102.1	0.09924	0.1875
130	367.3	359.3	61.91	8.303	52.48	102.1	0.1024	0.1866
135	390.0	382.0	60.73	8.996	54.42	102.0	0.1055	0.1856
140	413.7	405.7	59.47	9.764	56.41	101.8	0.1087	0.1846