



# R-403B

## R-403B

**Composition:** (R-22 / 290 / 218) • (56 / 5 / 39 wt%)

**Replaces:** R-13B1

**Application:**

Very low temperature single-stage refrigeration

**Performance:**

- Evaporator operates in a vacuum when the low side temperature is below -55°F
- Capillary tube must be replaced with a longer/more restrictive size

**Lubricant:**

Compatible with mineral oil, alkylbenzene and polyolester

**Retrofitting:**

- Replacement for R-13B1 (Follow equipment manufacturer's guidelines)

[ PRESSURE-TEMP CHART ]

TEMP. (°F)	R-403B psig
-70	10.5"
-65	7.8"
-60	4.5"
-55	1.2"
-50	1.3
-45	3.3
-40	4.8
-35	7.4
-30	10.1
-25	13.2
-20	16.5
-15	20.1
-10	24.0
-5	28.2
0	32.8
5	37.7
10	43.0
15	48.7
20	54.9
25	61.4
30	68.4
35	75.9
40	84.8
45	93.3
50	102
55	112
60	122
65	132
70	144
75	156
80	168
85	181
90	195
95	210
100	225
105	242
110	258
115	276
120	295

[ PHYSICAL PROPERTIES OF REFRIGERANTS ]

	National R-403B
Environmental Classification	HCFC
Molecular Weight	103.25
Boiling Point (1atm, °F)	-46.8
Critical Pressure (psia)	637.7
Critical Temperature (°F)	191.6
Critical Density (lb./ft <sup>3</sup> )	32.9
Liquid Density (70 °F, lb./ft <sup>3</sup> )	72.8
Vapor Density (bp, lb./ft <sup>3</sup> )	0.35
Heat of Vaporization (bp, BTU/lb.)	82.1
Specific Heat Liquid (70 °F, BTU/lb. °F)	0.313
Specific Heat Vapor (1atm, 70 °F, BTU/lb. °F)	0.182
Ozone Depletion Potential (CFC 11 = 1.0)	0.028
Global Warming Potential (CO2 = 1.0)	4460
ASHRAE Standard 34 Safety Rating	A1
Temperature Glide (°F) (see section 2)	2

[ AVAILABLE IN SIZES ]

REFRIGERANT

R-403B

Type

Cylinder

Size

25 lb.

100 lb.



# Thermodynamic Properties of R-403B

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)
-70	9.7	9.4	88.22	—	—	—	—	—
-65	11.0	10.8	87.65	—	—	—	—	—
-60	12.6	12.3	87.07	—	—	—	—	—
-55	14.2	14.0	86.50	—	—	—	—	—
-50	16.1	15.8	85.92	—	—	—	—	—
-45	18.1	17.8	85.35	—	—	—	—	—
-40	20.2	19.5	84.77	0.470	4.23	82.89	0.02197	0.2087
-35	22.8	22.1	84.23	0.527	5.52	83.54	0.02501	0.2080
-30	25.6	24.8	83.69	0.590	6.83	84.18	0.02804	0.2073
-25	28.6	27.9	83.14	0.658	8.14	84.82	0.03105	0.2067
-20	32.0	31.2	82.58	0.731	9.46	85.46	0.03405	0.2062
-15	35.6	34.8	82.02	0.812	10.79	86.08	0.03703	0.2056
-10	39.5	38.7	81.45	0.898	12.13	86.70	0.03999	0.2051
-5	43.8	42.9	80.87	0.992	13.48	87.31	0.04294	0.2046
0	48.4	47.5	80.29	1.094	14.83	87.91	0.04587	0.2042
5	53.3	52.4	79.70	1.203	16.20	88.51	0.04880	0.2037
10	58.6	57.7	79.10	1.321	17.58	89.09	0.05171	0.2033
15	64.4	63.4	78.49	1.448	18.96	89.66	0.05460	0.2029
20	70.5	69.6	77.87	1.584	20.36	90.22	0.05749	0.2025
25	77.1	76.1	77.25	1.730	21.76	90.78	0.06036	0.2021
30	84.1	83.1	76.61	1.888	23.18	91.31	0.06322	0.2018
35	91.6	90.6	75.96	2.056	24.61	91.84	0.06608	0.2014
40	99.5	98.5	75.30	2.237	26.04	92.35	0.06892	0.2011
45	108.0	107.0	74.63	2.431	27.49	92.85	0.07176	0.2007
50	117.0	116.0	73.94	2.638	28.95	93.33	0.07458	0.2004
55	126.6	125.5	73.24	2.860	30.43	93.80	0.07740	0.2000
60	136.7	135.6	72.53	3.098	31.91	94.25	0.08022	0.1997
65	147.4	146.3	71.80	3.352	33.41	94.68	0.09303	0.1993
70	158.7	157.6	71.06	3.624	34.92	95.09	0.08583	0.1990
75	170.6	169.5	70.29	3.915	36.45	95.48	0.08863	0.1986
80	183.2	182.1	69.51	4.227	37.99	95.85	0.09143	0.1982
85	196.4	195.3	68.71	4.560	39.55	96.20	0.09423	0.1978
90	210.4	209.2	67.89	4.918	41.12	96.53	0.09702	0.1974
95	225.0	223.9	67.05	5.301	42.71	96.83	0.09982	0.1970
100	240.4	239.2	66.18	5.711	44.32	97.10	0.1026	0.1966
105	256.5	255.3	65.29	6.153	45.94	97.34	0.1054	0.1961
110	273.4	272.2	64.37	6.627	47.59	97.55	0.1082	0.1956
115	291.0	289.9	63.41	7.138	49.26	97.73	0.1111	0.1951
120	309.5	308.3	62.43	7.689	50.95	97.87	0.1139	0.1946