



R-508B

R-508B

Replaces: (R-23 / 116) • (46 / 54 wt%)

Replaces: R-503 & R-13

Application:

Very low temperature refrigeration (low stage of a cascade system)

Performance:

- PT properties are very similar to R-503 and can be used to replace R-13 or R-503 in an existing system
- Higher capacity and lower discharge temperature compared to R-23

Lubricant Recommendation:

- Compatible with polyolester
- Hydrocarbon additives are often added to a system to improve oil circulation at very low temperatures

Retrofitting:

- Consult the comments on Page 10
- See Ultra Low Temperature Refrigeration Section (pages 66-67)

[PRESSURE-TEMP CHART]

TEMP. (°F)	R-508B psig
-125	0.5
-120	3.1
-115	6.0
-110	9.3
-105	12.9
-100	16.9
-95	21.4
-90	26.4
-85	31.8
-80	37.8
-75	44.4
-70	51.5
-65	59.3
-60	67.8
-55	76.9
-50	86.8
-45	97.5
-40	109
-35	121
-30	135
-25	149
-20	164
-15	180
-10	197
-5	216
0	235
5	256
10	278
15	301
20	326

[PHYSICAL PROPERTIES OF REFRIGERANTS]

	National R-508B
Environmental Classification	HFC
Molecular Weight	95.4
Boiling Point (1atm, °F)	-125.3
Critical Pressure (psia)	556.1
Critical Temperature (°F)	53.7
Critical Density (lb./ft ³)	35.6
Liquid Density (20°F, lb./ft ³)	65.4
Vapor Density (bp, lb./ft ³)	0.426
Heat of Vaporization (bp, BTU/lb.)	71.4
Specific Heat Liquid (20°F, BTU/lb. °F)	0.4221
Specific Heat Vapor (1atm, 20°F, BTU/lb. °F)	0.1701
Ozone Depletion Potential (CFC 11 = 1.0)	0
Global Warming Potential (CO2 = 1.0)	13400
ASHRAE Standard 34 Safety Rating	A1

[AVAILABLE IN SIZES]

REFRIGERANT	Type	Size
	R-508B	Cylinder
	10 lb.	
	20 lb.	
	70 lb.	



Thermodynamic Properties of R-508B

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)
-160	4.1	3.9	100.7	0.1181	-32.27	44.15	-0.08953	0.1664
-155	5.1	4.8	99.96	0.1438	-30.98	44.72	-0.08527	0.1640
-150	6.2	5.9	99.24	0.1737	-29.70	45.29	-0.08109	0.1618
-145	7.5	7.2	98.52	0.2083	-28.42	45.85	-0.07699	0.1596
-140	8.9	8.6	97.80	0.2482	-27.14	46.40	-0.07297	0.1576
-135	10.6	10.3	97.08	0.2937	-25.86	46.95	-0.06900	0.1557
-130	12.6	12.3	96.37	0.3455	-24.57	47.49	-0.06509	0.1539
-125	14.8	14.5	95.65	0.4041	-23.29	48.03	-0.06124	0.1522
-120	17.4	17.1	94.92	0.4701	-22.00	48.56	-0.05743	0.1505
-115	20.2	19.9	94.19	0.5441	-20.70	49.08	-0.05366	0.1490
-110	23.4	23.1	93.45	0.6269	-19.40	49.59	-0.04993	0.1476
-105	27.0	26.7	92.70	0.7191	-18.09	50.10	-0.04623	0.1462
-100	31.0	30.8	91.94	0.8214	-16.77	50.59	-0.04256	0.1449
-95	35.5	35.2	91.18	0.9347	-15.45	51.08	-0.03892	0.1436
-90	40.4	40.1	90.39	1.060	-14.11	51.56	-0.03531	0.1424
-85	45.8	45.6	89.60	1.198	-12.76	52.02	-0.03172	0.1412
-80	51.7	51.6	88.79	1.349	-11.40	52.48	-0.02815	0.1401
-75	58.3	58.1	87.96	1.515	-10.03	52.92	-0.02460	0.1391
-70	65.4	65.3	87.12	1.697	-8.648	53.35	-0.02106	0.1381
-65	73.2	73.0	86.25	1.896	-7.249	53.76	-0.01753	0.1371
-60	81.6	81.5	85.36	2.114	-5.834	54.17	-0.01402	0.1361
-55	90.7	90.7	84.45	2.351	-4.403	54.55	-0.01051	0.1352
-50	100.6	100.6	83.51	2.611	-2.955	54.92	-0.00701	0.1343
-45	111.3	111.3	82.55	2.893	-1.487	55.27	-0.00350	0.1334
-40	122.8	122.8	81.55	3.202	0.000	55.60	0.00000	0.1325
-35	135.2	135.1	80.52	3.539	1.509	55.90	0.00351	0.1316
-30	148.4	148.4	79.45	3.906	3.041	56.18	0.00702	0.1307
-25	162.6	162.6	78.34	4.308	4.598	56.44	0.01055	0.1298
-20	177.8	177.8	77.18	4.748	6.182	56.66	0.01409	0.1289
-15	194.0	194.0	75.98	5.231	7.796	56.85	0.01765	0.1280
-10	211.3	211.3	74.72	5.763	9.441	56.99	0.02123	0.1270
-5	229.7	229.6	73.40	6.350	11.12	57.10	0.02484	0.1260
0	249.3	249.2	72.02	7.000	12.84	57.15	0.02849	0.1249
5	270.1	270.0	70.56	7.725	14.59	57.13	0.03218	0.1237
10	292.2	292.1	69.02	8.540	16.40	57.05	0.03592	0.1225
15	315.7	315.6	67.39	9.461	18.26	56.88	0.03972	0.1211
20	340.6	340.5	65.63	10.52	20.18	56.60	0.04361	0.1195