



R-508B

Technical Guidelines

Physical Properties of Refrigerants	R-508B
Environmental Classification	HFC
Molecular Weight	95.4
Boiling Point (1 atm, °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 (1 atm, 20 °F, BTU/lb. °F)	0.1701
Ozone Depletion Potential (CFC 11 = 1.0)	0
Global Warming Potential (CO ₂ = 1.0)	13400
ASHRAE Standard 34 Safety Rating	A1

Available in the following sizes

R-508B
 5 LB. CYLINDER
 10 LB. CYLINDER
 20 LB. CYLINDER
 70 LB. CYLINDER

R-508B (R-23/116)
 (46 / 54 wt%)

Replaces: R-503 and R-13

Applications: 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 lubricant; it may still be necessary to use hydrocarbon additives to help with oil circulation

Retrofitting: from R-503 page 101
 from R-13 page 101

See Ultra Low Temperature Refrigeration Section - page 64-65

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



THERMODYNAMIC PROPERTIES OF R-508B

Temp [°F]	Pressure	Pressure	Density	Density	Enthalpy	Enthalpy	Entropy	Entropy
	Liquid [psia]	Vapor [psia]	Liquid [lb/ft ³]	Vapor [lb/ft ³]	Liquid [Btu/lb]	Vapor [Btu/lb]	Liquid [Btu/R-lb]	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