

Genetron® Refrigerants

Pressure – Temperature Chart

°F	°C	13†	23	503†	508B	°F	°C	113†	123	11†	114†
-120.0	-94.4	4.6	3.9	2.7	2.7	35.0	1.7	25.1	19.5	17.2	2.1
-110.0	-78.9	2.1	2.9	8.7	8.7	40.0	4.4	24.4	18.2	15.6	0.5
-100.0	-73.3	7.5	9.1	16.2	16.3	45.0	7.2	23.7	16.6	13.9	2.1
-95.0	-70.6	10.7	12.8	20.5	20.7	50.0	10.0	22.9	15.0	12.0	4.0
-90.0	-67.8	14.2	16.9	25.3	25.6	55.0	12.8	21.9	13.2	9.9	5.9
-85.0	-65.0	18.0	21.4	30.6	31.0	60.0	15.8	20.9	11.2	7.7	8.0
-80.0	-62.2	22.3	26.5	36.4	36.9	65.0	18.3	19.8	9.0	5.3	10.3
-75.0	-59.4	26.9	32.0	42.8	43.4	70.0	21.1	18.6	6.6	2.7	12.7
-70.0	-56.7	32.0	38.2	49.2	50.4	75.0	23.9	17.3	4.0	0.1	15.3
-65.0	-53.9	37.5	44.9	57.3	58.1	80.0	26.7	15.8	1.2	1.6	18.1
-60.0	-51.1	43.5	52.3	65.4	66.5	85.0	29.4	14.2	0.9	3.2	21.1
-55.0	-48.3	50.0	60.3	74.3	75.5	90.0	32.2	12.5	2.5	5.0	24.3
-50.0	-45.5	57.0	69.0	83.9	85.3	95.0	35.0	10.6	4.2	6.9	27.7
-45.0	-42.8	64.6	78.5	94.2	95.8	100.0	37.8	8.6	6.1	8.9	31.3
-40.0	-40.0	72.7	88.8	105.3	107.2	110.0	43.3	4.0	10.3	13.4	39.3
-35.0	-37.2	81.5	99.9	117.2	119.3	120.0	48.9	0.6	15.1	18.5	48.2
-30.0	-34.4	90.9	111.9	130.0	132.4	130.0	54.4	3.6	20.6	24.2	58.2
-25.0	-31.7	100.9	124.8	143.6	146.4						
-20.0	-28.8	111.7	137.6	158.2	161.3						

Black figures – psig

Blue figures – inches mercury vacuum

Genetron® Product	ASHRAE Number	Refrigerant Type	Refrigerant Class	Typical Lubricant Used*	Liquid Density (lbs/ft ³)**		Boiling Point °F
					0 °F	80 °F	
Genetron 11†	11	Single Component	CFC	MO	98.2	91.9	74.7
Genetron 12†	12	Single Component	CFC	MO	90.6	81.5	-21.6
Genetron 13†	13	Single Component	CFC	MO	77.0	49.2	-114.5
Genetron 22	22	Single Component	HCFC	MO	83.6	73.9	-41.6
Genetron 23	23	Single Component	HFC	POE	72.6	–	-115.8
Genetron 123	123	Single Component	HCFC	AB	97.9	91.1	82.1
Genetron 134a	134a	Single Component	HFC	POE	84.4	74.9	-14.9
Genetron MP39	401A	Blend	HCFC	AB	83.2	74.5	-27.2
Genetron MP66	401B	Blend	HCFC	AB	83.2	74.4	-30.4
Genetron HP80	402A	Blend	HCFC	AB	82.6	70.9	-56.5
Genetron HP81	402B	Blend	HCFC	AB	82.1	71.3	-52.9
Genetron 404A	404A	Blend	HFC	POE	75.9	64.8	-51.8
Genetron 407C	407C	Blend	HFC	POE	81.1	70.6	-46.9
Genetron 408A	408A	Blend	HCFC	AB	75.5	65.5	-49.8
Genetron 409A	409A	Blend	HCFC	AB	84.4	75.9	-29.6
Genetron AZ-20®	410A	Azeotropic Mixture	HFC	POE	77.3	65.7	-60.9
Genetron 500†	500	Azeotrope	CFC	MO	79.6	70.9	-28.5
Genetron 502†	502	Azeotrope	CFC	MO	86.8	75.2	-49.5
Genetron 503†	503	Azeotrope	CFC	MO	71.6	–	-125.5
Genetron AZ-50®	507	Azeotrope	HFC	POE	76.3	65.0	-52.8
Genetron 508B	508B	Azeotrope	HFC/PFC	POE	72.2	–	-125.3

When retrofitting a system with a new refrigerant, use this formula to determine amount needed:

$$\text{Pounds of new refrigerant} = \frac{\text{Pounds of original refrigerant} \times \text{density of new refrigerant (at 80°F)}}{\text{density of original refrigerant (at 80°F)}}$$

Example

If you were using 1,000 pounds of R-502, you'll need about 860 pounds of AZ-50, as follows:

$$\text{Pounds of AZ-50} = \frac{1,000 \times 64.9}{75.5} = \frac{64,900}{75.5} = 860$$

* POE = polyol ester, MO = mineral oil, AB = Alkylbenzene ** Divide by 7.48 to convert to lbs/gal.

† U.S. production stopped Dec. 31, 1995.

Honeywell Genetron Refrigerants

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Genetron® Refrigerants Pressure Temperature Chart

°F	°C	MP39					MP66			409A		22
		124	134a	12T	Bubble	Dew	500†	Bubble	Dew	Bubble	Dew	
-40	-40	22.1	14.8	11.0	8.1	13.2	7.6	6.5	11.8	5.7	13.6	0.6
-35	-37.2	20.9	12.5	8.4	5.1	10.7	4.5	3.3	9.1	2.4	11.1	2.6
-30	-34.4	19.4	9.8	5.5	1.7	7.9	1.1	0.2	6.1	0.6	8.4	4.9
-25	-31.7	17.8	6.9	2.4	1.0	4.8	1.3	2.1	2.8	2.6	5.4	7.4
-20	-28.9	16.0	3.7	0.5	3.0	1.4	3.3	4.3	0.5	4.7	2.0	10.2
-15	-26.1	14.0	0.1	2.4	5.2	1.2	5.5	6.6	2.5	7.1	0.8	13.2
-10	-23.3	11.8	1.9	4.5	7.7	3.3	7.9	9.2	4.7	9.6	2.8	16.5
-5	-20.6	9.3	4.1	6.7	10.3	5.5	10.6	12.0	7.1	12.4	5.0	20.1
0	-17.8	6.6	6.5	9.1	13.2	8.0	13.4	15.1	9.7	15.5	7.5	24.0
5	-15.0	3.6	9.1	11.7	16.3	10.7	16.5	18.4	12.6	18.7	10.1	28.3
10	-12.2	0.3	11.9	14.6	19.7	13.7	19.9	22.0	15.8	22.3	13.0	32.8
15	-9.4	1.6	15.0	17.7	23.4	16.9	23.5	25.9	19.2	26.1	16.1	37.8
20	-6.7	3.6	18.4	21.0	27.4	20.4	27.4	30.1	23.0	30.3	19.5	43.1
25	-3.9	5.7	22.1	24.6	31.7	24.2	31.7	34.6	27.0	34.7	23.2	48.8
30	-1.1	8.0	26.1	28.4	36.4	28.3	36.2	39.5	31.4	39.5	27.1	55.0
35	1.7	10.5	30.4	32.5	41.3	32.8	41.0	44.8	36.1	44.6	31.4	61.5
40	4.4	13.2	35.0	36.9	46.6	37.6	46.2	50.4	41.1	50.1	36.1	68.6
45	7.2	16.1	40.1	41.6	52.4	42.7	51.8	56.4	46.6	56.0	41.0	76.1
50	10.0	19.3	45.4	46.6	58.5	48.2	57.7	62.8	52.4	62.2	46.3	84.1
55	12.8	22.7	51.2	51.9	65.0	54.1	64.0	69.6	58.7	68.9	52.0	92.6
60	15.6	26.3	57.4	57.6	71.9	60.4	70.7	76.9	65.4	75.9	58.1	101.6
65	18.3	30.2	64.0	63.7	79.3	67.2	77.8	84.7	72.5	83.4	64.7	111.2
70	21.1	34.4	71.1	70.1	87.1	74.4	85.4	92.9	80.1	91.4	71.6	121.4
75	23.9	38.9	78.7	76.8	95.4	82.1	93.4	101.6	88.2	99.8	79.0	132.2
80	26.7	43.7	86.7	84.0	104.2	90.2	101.9	110.9	96.8	108.7	86.9	143.6
85	29.4	48.8	95.2	91.6	113.6	98.9	110.8	120.7	106.0	118.1	95.2	155.7
90	32.2	54.3	104.3	99.6	123.4	108.1	120.3	131.0	115.6	128.0	104.1	168.4
95	35.0	60.1	113.9	108.0	133.8	117.9	130.3	141.9	125.9	138.4	113.4	181.8
100	37.8	66.2	124.2	116.9	144.8	128.2	140.8	153.4	136.8	149.4	123.4	195.9
105	40.6	72.7	135.0	126.3	156.4	139.1	151.9	165.5	148.2	161.0	133.8	210.8
110	43.3	79.6	146.4	136.1	168.5	150.6	163.5	178.3	160.4	173.1	144.9	226.4
115	46.1	86.9	158.4	146.4	181.3	162.8	175.7	191.6	173.1	185.9	156.6	242.8
120	48.9	94.6	171.2	157.3	194.7	175.6	188.6	205.7	186.6	199.2	168.9	260.0
125	51.7	102.8	184.6	168.6	208.8	189.0	202.1	220.4	200.7	213.2	181.8	278.0
130	54.4	111.3	198.7	180.5	223.6	203.2	216.2	235.9	215.6	227.8	195.5	296.9
135	57.2	120.4	213.6	193.0	239.1	218.1	231.0	252.0	231.2	243.1	209.8	316.7
140	60.0	129.9	229.2	206.0	255.3	233.8	246.5	268.9	247.6	259.1	224.8	337.4
145	62.8	139.9	245.7	219.7	272.2	250.2	262.7	286.6	264.8	275.7	240.5	359.0
150	65.6	150.4	262.9	233.9	289.8	267.4	279.7	305.0	282.8	293.1	257.0	381.7

°F	°C	407C		408A		404A		HP81		AZ-50®		HP80		AZ-20®
		Bubble	Dew	Bubble	Dew	502†	Bubble	Dew	Bubble	Dew	507A	Bubble	Dew	410A
-40	-40.0	2.9	4.5	4.2	3.8	3.8	5.2	4.6	5.7	3.8	5.7	7.6	5.8	10.8
-35	-37.2	5.2	0.7	6.7	6.3	6.2	7.8	7.1	8.3	6.2	8.4	10.5	8.5	14.2
-30	-34.4	7.9	1.7	9.4	9.0	8.8	10.7	9.9	11.2	8.9	11.3	13.6	11.4	17.8
-25	-31.7	10.7	4.0	12.4	11.9	11.7	13.8	13.0	14.4	11.9	14.5	17.0	14.7	21.9
-20	-28.9	13.9	6.5	15.6	15.1	14.9	17.2	16.3	17.8	15.2	18.0	20.7	18.2	26.3
-15	-26.1	17.3	9.3	19.2	18.6	18.3	20.9	20.0	21.5	18.7	21.8	24.7	22.1	31.1
-10	-23.3	21.1	12.4	23.0	22.4	22.1	25.0	24.0	25.6	22.6	26.0	29.1	26.3	36.4
-5	-20.6	25.2	15.8	27.2	26.6	26.1	29.4	28.3	30.0	26.8	30.5	33.9	30.9	42.1
0	-17.8	29.6	19.5	31.7	31.1	30.5	34.1	33.0	34.8	31.4	35.3	39.0	35.9	48.3
5	-15.0	34.4	23.6	36.6	36.0	35.3	39.3	38.1	40.0	36.4	40.6	44.5	41.3	55.0
10	-12.2	39.6	28.0	41.9	41.2	40.4	44.8	43.6	45.5	41.7	46.2	50.5	47.0	62.2
15	-9.4	45.2	32.7	47.6	46.8	45.9	50.8	49.5	51.5	47.5	52.3	56.9	53.3	69.9
20	-6.7	51.3	37.9	53.7	52.9	51.8	57.2	55.8	57.9	53.6	58.9	63.7	60.0	78.3
25	-3.9	57.8	43.6	60.2	59.4	58.1	64.0	62.6	64.7	60.3	65.9	71.1	67.1	87.2
30	-1.1	64.7	49.6	67.2	66.4	64.8	71.4	69.9	72.0	67.4	73.4	78.9	74.8	96.8
35	1.7	72.2	56.2	74.7	73.8	72.0	79.2	77.7	79.9	75.0	81.4	87.3	83.0	107.1
40	4.4	80.2	63.2	82.7	81.8	79.7	87.6	86.0	88.2	83.1	89.9	96.2	91.7	118.1
45	7.2	88.7	70.7	91.2	90.2	87.9	96.5	94.8	97.1	91.8	99.0	105.6	101.1	129.8
50	10.0	97.8	78.8	100.3	99.2	96.6	106.0	104.2	106.5	101.0	108.7	115.7	111.0	142.2
55	12.8	107.5	87.5	109.9	108.8	105.8	116.0	114.3	116.5	110.8	119.0	126.4	121.5	155.5
60	15.6	117.7	96.8	120.1	119.0	115.6	126.7	124.9	127.2	121.3	129.9	137.7	132.7	169.6
65	18.3	128.7	106.7	130.9	129.8	126.0	138.1	136.2	138.4	132.3	141.4	149.7	144.5	184.5
70	21.1	140.2	117.2	142.4	141.2	136.9	150.0	148.1	150.3	144.0	153.7	162.4	157.1	200.4
75	23.9	152.5	128.4	154.5	153.2	148.5	162.7	160.7	162.9	156.4	166.6	175.8	170.3	217.1
80	26.7	165.5	140.4	167.2	166.0	160.7	176.1	174.1	176.1	169.4	180.3	189.9	184.3	234.9
85	29.4	179.2	153.1	180.7	179.4	173.6	190.3	188.2	190.1	183.2	194.7	204.8	199.1	253.7
90	32.2	193.6	166.5	194.9	193.6	187.2	205.2	203.0	204.8	197.8	209.9	220.4	214.6	273.5
95	35.0	208.8	180.8	209.9	208.5	201.5	220.9	218.7	220.3	213.1	225.9	236.9	231.0	294.4
100	37.8	224.9	195.8	225.7	224.2	216.5	237.4	235.2	236.6	229.2	242.8	254.3	248.3	316.4
105	40.6	241.8	211.8	242.2	240.8	232.3	254.8	252.6	253.7	246.2	260.5	272.5	266.4	339.6
110	43.3	259.6	228.7	259.6	258.1	248.9	273.1	270.8	271.7	264.0	279.2	291.6	285.5	364.1
115	46.1	278.2	246.5	277.9	276.4	266.3	292.3	290.0	290.5	282.8	298.8	311.7	305.5	389.9
120	48.9	297.8	265.3	297.0	295.5	284.6	312.5	310.2	310.2	302.4	319.4	332.7	326.6	416.9
125	51.7	318.3	285.2	317.1	315.6	303.7	333.7	331.4	330.9	323.0	341.1	354.8	348.6	445.4
130	54.4	339.9	306.1	338.2	336.6	323.8	355.9	353.7	352.6	344.6	363.9	377.9	371.8	475.4
135	57.2	362.4	328.2	360.2	358.6	344.8	379.3	377.1	375.3	367.3	387.8	402.2	396.1	506.9
140	60.0	386.0	351.4	383.3	381.7	366.7	403.8	401.7	399.0	391.0	412.9	427.5	421.6	540.1
145	62.8	410.7	375.9	407.5	405.9	389.8	429.6	427.6	423.8	415.9	439.3	454.1	448.4	575.1
150	65.6	436.5	401.7	432.8	431.2	413.8	456.7	454.9	449.8	442.0	467.2	482.0	476.5	611.9

Black figures – psig Blue figures – inches mercury vacuum † U.S. production stopped Dec. 31, 1995.