



Refrigerants by The Chemours Company

Pressure-Temperature Guide for Refrigeration

Key: **Green** (in of Hg) = Vacuum
Black (psig) = Saturated Vapor (calculate superheat)
Bold (psig) = Saturated Liquid (calculate subcooling)

DO NOT MIX REFRIGERANTS

Do not use Opteon™ XL refrigerants for retrofits as they are A2L class refrigerants

A2L refrigerants can only be used in new equipment

Always remove liquid from the cylinder

For refrigerant related support, contact our Tech2Tech Support Team:

tech2tech@chemours.com

866-433-TECH (8324)



To add our Tech2Tech Support as a contact in your mobile device, use the QR Code above.

For more information about Opteon™ refrigerants, visit opteon.com



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OPTXLPTRF-2 05/22

SAFETY GROUP	Freon™ R-22	Freon™ R-407A	Opteon™ XP40 (R-449A)	R-448A	Freon™ R-134a	Opteon™ XP10 (R-513A)	Opteon™ XL10 (R-1234yf)	Freon™ R-404A	Freon™ R-507A	Opteon™ XP44 (R-452A)	Opteon™ XL20 (R-454C)	Opteon™ XL40 (R-454A)
	A1	A1	A1	A1	A1	A1	A2L	A1	A1	A1	A2L	A2L
°F	psig	psig	psig	psig	psig	psig	psig	psig	psig	psig	psig	psig
-50	6.1	9.0	7.3	7.4	18.7	16.3	16.0	0.1	0.9	3.3	9.5	4.6
-45	2.7	5.7	3.8	3.9	16.9	14.2	13.9	2.0	3.0	0.3	6.4	0.9
-40	0.6	2.0	0.0	0.1	14.8	11.8	11.5	4.3	5.4	2.4	3.0	1.6
-35	2.6	1.0	2.1	2.1	12.5	9.1	8.9	6.8	8.1	4.7	0.4	3.9
-30	4.9	3.3	4.4	4.4	9.8	6.1	6.0	9.6	11.0	7.3	2.4	6.4
-25	7.4	5.8	7.0	7.0	6.9	2.8	2.8	12.7	14.1	10.1	4.7	9.1
-20	10.2	8.5	9.9	9.8	3.7	0.4	0.4	16.0	17.6	13.2	7.2	12.1
-18	11.4	9.7	11.1	11.1	2.3	1.2	1.1	17.4	19.1	14.6	8.3	13.4
-16	12.6	10.9	12.3	12.3	0.8	2.0	1.9	18.9	20.6	15.9	9.4	14.8
-14	13.9	12.2	13.7	13.6	0.4	2.8	2.7	20.4	22.2	17.4	10.5	16.2
-12	15.2	13.5	15.0	15.0	1.1	3.6	3.5	22.0	23.8	18.9	11.7	17.6
-10	16.5	14.9	16.4	16.4	1.9	4.5	4.4	23.6	25.5	20.4	13.0	19.1
-8	17.9	16.3	17.9	17.9	2.8	5.5	5.3	25.3	27.2	22.0	14.3	20.6
-6	19.4	17.8	19.4	19.4	3.6	6.4	6.2	27.0	29.0	23.6	15.6	22.2
-4	20.9	19.3	21.0	21.0	4.6	7.4	7.2	28.8	30.9	25.3	17.0	23.9
-2	22.4	20.9	22.6	22.6	5.5	8.4	8.2	30.7	32.8	27.1	18.4	25.6
0	24.0	22.5	24.3	24.3	6.5	9.5	9.2	32.6	34.8	28.9	19.9	27.3
2	25.7	24.2	26.0	26.0	7.5	10.6	10.3	34.6	36.8	30.7	21.4	29.2
4	27.4	26.0	27.8	27.8	8.5	11.8	11.4	36.6	38.9	32.7	23.0	31.1
6	29.2	27.8	29.7	29.7	9.6	13.0	12.5	38.7	41.1	34.7	24.6	33.0
8	31.0	29.7	31.6	31.6	10.8	14.2	13.7	40.9	43.4	36.7	26.3	35.0
10	32.8	31.6	33.6	33.6	11.9	15.5	14.9	43.1	45.7	38.8	28.0	37.1
12	34.8	33.6	35.6	35.7	13.1	16.8	16.2	45.4	48.0	41.0	29.8	39.2
14	36.8	35.7	37.7	37.8	14.4	18.1	17.5	47.8	50.5	43.3	31.7	41.4
16	38.8	37.8	39.9	40.0	15.7	19.5	18.8	50.2	53.0	45.6	33.6	43.7
18	40.9	40.0	42.1	42.2	17.0	21.0	20.2	52.7	55.6	48.0	35.5	46.1
20	43.1	42.3	44.5	44.6	18.4	22.4	21.6	55.3	58.2	50.5	37.6	48.5
22	45.3	44.7	46.8	47.0	19.9	24.0	23.1	58.0	61.0	53.0	39.7	51.0
24	47.6	47.1	49.3	49.4	21.3	25.6	24.6	60.7	63.8	55.6	41.8	53.6
26	50.0	49.6	51.8	52.0	22.9	27.2	26.2	63.5	66.7	58.3	44.0	56.2
28	52.4	52.2	54.5	54.6	24.5	28.9	27.8	66.4	69.6	61.1	46.3	58.9
30	55.0	54.8	57.1	57.3	26.1	30.6	29.4	69.3	72.7	64.0	48.7	61.7
32	57.5	57.6	59.9	60.1	27.8	32.4	31.1	72.4	75.8	66.9	51.1	64.6
34	60.2	60.4	62.8	63.0	29.5	34.3	32.9	75.5	79.0	69.9	53.6	67.6
36	62.9	63.3	65.7	65.9	31.3	36.2	34.7	78.7	82.3	73.0	56.2	70.6
38	65.7	66.3	68.7	69.0	33.1	38.1	36.5	82.0	85.7	76.2	58.8	73.7
40	68.6	69.4	71.8	72.1	35.0	40.1	38.4	85.4	89.2	79.4	61.5	76.9
42	71.5	72.5	75.0	75.3	37.0	42.2	40.4	88.8	92.7	82.8	64.3	80.3
44	74.5	75.8	78.3	78.6	39.0	44.3	42.4	92.4	96.4	86.3	67.2	83.6
46	77.6	79.1	81.7	82.0	41.1	46.5	44.5	96.0	100.1	89.8	70.1	87.1
48	80.8	82.6	85.1	85.4	43.2	48.7	46.6	99.8	104.0	93.4	73.2	90.7
50	84.1	86.1	88.7	89.0	45.4	51.0	48.8	103.6	107.9	97.1	76.3	94.4
52	87.4	108.2	110.1	112.1	47.7	53.4	51.0	109.2	112.0	114.9	103.5	118.4
54	90.8	112.3	114.2	116.3	50.0	55.9	53.3	113.3	116.2	119.1	107.3	122.8
56	94.4	116.5	118.5	120.5	52.4	58.4	55.7	117.4	120.4	123.5	111.2	127.2
58	98.0	120.8	122.8	124.9	54.9	60.9	58.1	121.7	124.8	127.9	115.2	131.7
60	101.6	125.2	127.2	129.4	57.4	63.5	60.6	126.0	129.2	132.4	119.3	136.4
65	111.3	136.7	138.8	141.1	64.0	70.4	67.0	137.3	140.8	144.3	129.9	148.4
70	121.4	148.8	151.0	153.5	71.1	77.7	73.9	149.3	153.0	156.8	141.2	161.2
75	132.2	161.7	163.9	166.6	78.7	85.5	81.3	162.0	165.9	170.0	153.0	174.7
80	143.6	175.3	177.6	180.5	86.7	93.8	89.0	175.4	179.6	183.9	165.6	188.9
82	148.4	181.0	183.3	186.2	90.0	97.3	92.3	181.0	185.3	189.7	170.76	194.8
84	153.2	186.7	189.1	192.1	93.5	100.8	95.6	186.7	191.1	195.6	176.06	200.9
86	158.2	192.7	195.0	198.1	97.0	104.4	98.9	192.5	197.1	201.7	181.47	207.0
88	163.2	198.7	201.0	204.2	100.6	108.1	102.4	198.4	203.1	207.8	187.0	213.3
90	168.4	204.8	207.2	210.5	104.3	111.9	105.9	204.5	209.3	214.1	192.6	219.8
92	173.7	211.1	213.5	216.9	108.1	115.8	109.6	210.7	215.6	220.6	198.4	226.3
94	179.1	217.6	219.9	223.4	112.0	119.7	113.3	217.0	222.1	227.1	204.3	233.0
96	184.6	224.1	226.5	230.0	115.9	123.8	117.0	223.4	228.7	233.8	210.2	239.8
98	190.2	230.8	233.2	236.8	120.0	127.9	120.9	230.0	235.4	240.6	216.3	246.8
100	195.9	237.7	240.1	243.7	124.2	132.1	124.9	236.8	242.3	247.6	222.5	253.9
102	201.8	244.6	247.0	250.8	128.4	136.4	128.9	243.6	249.3	254.7	228.9	261.1
104	207.7	251.7	254.2	258.0	132.8	140.9	133.0	250.6	256.5	261.9	235.3	268.5
106	213.8	259.0	261.4	265.3	137.2	145.4	137.2	257.8	263.8	269.3	241.9	276.0
108	220.0	266.4	268.8	272.8	141.7	150.0	141.5	265.1	271.2	276.8	248.6	283.6
110	226.4	273.9	276.4	280.5	146.4	154.7	145.9	272.5	278.8	284.5	255.5	291.4
112	232.8	281.6	284.1	288.3	151.1	159.5	150.4	280.1	286.6	292.3	262.4	299.4
114	239.4	289.5	291.9	296.2	156.0	164.4	155.0	287.9	294.5	300.3	269.5	307.5
116	246.1	297.5	299.9	304.3	160.9	169.4	159.6	295.8	302.6	308.4	276.7	315.8
118	253.0	305.6	308.0	312.5	166.0	174.5	164.4	303.8	310.8	316.6	284.1	324.2
120	260.0	314.0	316.3	320.9	171.2	179.8	169.2	312.1	319.2	325.1	291.6	332.8
122	267.1	322.4	324.8	329.5	176.5	185.1	174.2	320.4	327.8	333.7	299.2	341.5
124	274.3	331.1	333.4	338.2	181.8	190.5	179.3	329.0	336.5	342.4	306.9	350.4
126	281.7	339.9	342.2	347.0	187.4	196.1	184.4	337.7	345.4	351.3	314.8	359.4
128	289.2	348.8	351.1	356.1	193.0	201.7	189.7	346.6	354.5	360.4	322.8	368.6
130	296.9	357.9	360.2	365.3	198.7	207.5	195.0	355.7	363.8	369.6	331.0	378.0
135	316.7	381.5	383.7	389.0	213.6	222.5	208.9	379.1	387.8	393.4	352.0	402.1
140	337.4	406.2	408.3	413.8	229.2	238.2	223.4	403.7	413.0	418.3	373.9	427.4
150	381.7	458.9	460.7	466.7	263.0	271.9	254.7	456.8	467.4	471.3	420.6	481.1



Refrigerants by The Chemours Company

Pressure-Temperature Guide for Refrigeration

Key: **Green** (in of Hg) = Vacuum
Black (bar_g) = Saturated Vapor (calculate superheat)
Bold (bar_g) = Saturated Liquid (calculate subcooling)

DO NOT MIX REFRIGERANTS

Do not use Opteon™ XL refrigerants for retrofits as they are A2L class refrigerants

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Always remove liquid from the cylinder

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SAFETY GROUP	Freon™ R-22	Freon™ R-407A	Opteon™ XP40 (R-449A)	R-448A	Freon™ R-134a	Opteon™ XP10 (R-513A)	Opteon™ XL10 (R-1234yf)	Freon™ R-404A	Freon™ R-507A	Opteon™ XP44 (R-452A)	Opteon™ XL20 (R-454C)	Opteon™ XL40 (R-454A)
	A1	A1	A1	A1	A1	A1	A2L	A1	A1	A1	A2L	A2L
°C	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g	bar_g
-50	-0.37	-0.46	-0.41	-0.41	-0.72	-0.65	-0.64	-0.20	-0.15	-0.29	-0.46	-0.33
-48	-0.30	-0.39	-0.34	-0.34	-0.68	-0.60	-0.60	-0.12	-0.06	-0.22	-0.40	-0.26
-46	-0.22	-0.32	-0.26	-0.27	-0.64	-0.56	-0.55	-0.03	0.04	-0.13	-0.34	-0.18
-44	-0.14	-0.24	-0.18	-0.19	-0.60	-0.51	-0.50	0.07	0.14	-0.04	-0.26	-0.09
-42	-0.06	-0.16	-0.10	-0.10	-0.55	-0.45	-0.45	0.18	0.25	0.06	-0.19	0.01
-40	0.04	-0.07	0.00	0.00	-0.50	-0.39	-0.39	0.30	0.37	0.16	-0.10	0.11
-38	0.14	0.03	0.10	0.10	-0.45	-0.33	-0.33	0.42	0.50	0.28	-0.01	0.22
-36	0.25	0.14	0.21	0.21	-0.38	-0.26	-0.26	0.55	0.64	0.40	0.09	0.34
-34	0.37	0.25	0.33	0.33	-0.32	-0.19	-0.19	0.70	0.79	0.53	0.19	0.47
-32	0.49	0.37	0.46	0.46	-0.25	-0.11	-0.11	0.85	0.95	0.67	0.30	0.60
-30	0.63	0.51	0.60	0.60	-0.17	-0.02	-0.02	1.01	1.12	0.82	0.43	0.75
-28	0.77	0.65	0.75	0.75	-0.09	0.07	0.07	1.18	1.29	0.99	0.56	0.91
-26	0.92	0.80	0.90	0.90	0.00	0.17	0.16	1.37	1.49	1.16	0.69	1.07
-24	1.08	0.97	1.07	1.07	0.10	0.28	0.27	1.56	1.69	1.34	0.84	1.25
-22	1.26	1.14	1.25	1.25	0.20	0.39	0.38	1.77	1.90	1.54	1.00	1.44
-20	1.44	1.33	1.45	1.45	0.31	0.52	0.50	1.99	2.13	1.74	1.17	1.65
-18	1.63	1.53	1.65	1.65	0.43	0.65	0.62	2.22	2.37	1.97	1.35	1.86
-16	1.84	1.74	1.87	1.87	0.56	0.78	0.75	2.47	2.63	2.20	1.54	2.09
-14	2.06	1.97	2.10	2.10	0.69	0.93	0.90	2.73	2.90	2.45	1.74	2.33
-12	2.29	2.21	2.34	2.35	0.84	1.09	1.05	3.00	3.18	2.71	1.96	2.59
-10	2.53	2.46	2.60	2.61	0.99	1.25	1.20	3.29	3.48	2.98	2.18	2.86
-8	2.79	2.73	2.87	2.88	1.16	1.43	1.37	3.60	3.80	3.28	2.42	3.14
-6	3.06	3.01	3.16	3.17	1.33	1.61	1.55	3.92	4.13	3.59	2.68	3.45
-4	3.35	3.32	3.47	3.48	1.51	1.81	1.74	4.26	4.48	3.91	2.94	3.76
-2	3.65	3.63	3.79	3.80	1.71	2.02	1.94	4.62	4.84	4.25	3.23	4.10
0	3.97	3.97	4.13	4.14	1.91	2.24	2.15	4.99	5.23	4.61	3.52	4.45
2	4.30	4.32	4.49	4.50	2.13	2.47	2.36	5.38	5.63	4.99	3.84	4.83
4	4.65	4.70	4.87	4.88	2.36	2.71	2.60	5.79	6.05	5.39	4.17	5.22
6	5.01	5.09	5.26	5.28	2.61	2.97	2.84	6.22	6.49	5.80	4.51	5.63
8	5.40	5.50	5.68	5.70	2.86	3.24	3.09	6.67	6.96	6.24	4.88	6.06
10	5.80	7.18	7.31	7.45	3.13	3.52	3.36	7.14	7.44	7.64	6.88	7.87
12	6.22	7.68	7.82	7.96	3.42	3.82	3.64	7.64	7.95	8.15	7.34	8.40
14	6.65	8.21	8.35	8.49	3.72	4.13	3.94	8.15	8.47	8.70	7.83	8.96
16	7.11	8.75	8.90	9.05	4.03	4.45	4.25	8.69	9.02	9.26	8.34	9.53
18	7.59	9.32	9.47	9.63	4.36	4.80	4.57	9.25	9.60	9.85	8.87	10.13
20	8.09	9.92	10.07	10.24	4.70	5.15	4.90	9.83	10.20	10.46	9.42	10.76
22	8.61	10.54	10.69	10.87	5.07	5.53	5.26	10.44	10.82	11.09	9.99	11.41
24	9.15	11.19	11.34	11.53	5.44	5.92	5.62	11.07	11.47	11.76	10.59	12.08
26	9.71	11.86	12.01	12.21	5.84	6.33	6.01	11.73	12.14	12.45	11.20	12.79
28	10.30	12.56	12.71	12.92	6.26	6.75	6.41	12.42	12.84	13.16	11.85	13.52
30	10.91	13.28	13.44	13.66	6.69	7.20	6.82	13.13	13.57	13.91	12.51	14.28
32	11.54	14.04	14.20	14.42	7.14	7.66	7.26	13.87	14.33	14.68	13.20	15.06
34	12.20	14.82	14.99	15.22	7.61	8.14	7.71	14.64	15.12	15.48	13.92	15.88
36	12.88	15.64	15.80	16.05	8.11	8.65	8.18	15.44	15.94	16.31	14.66	16.72
38	13.59	16.48	16.65	16.90	8.62	9.17	8.66	16.27	16.79	17.17	15.43	17.60
40	14.32	17.36	17.52	17.79	9.15	9.71	9.17	17.13	17.67	18.06	16.23	18.51
42	15.08	18.26	18.43	18.71	9.71	10.28	9.70	18.03	18.58	18.98	17.05	19.45
44	15.87	19.21	19.37	19.66	10.29	10.86	10.24	18.95	19.53	19.94	17.90	20.42
46	16.69	20.18	20.35	20.64	10.89	11.47	10.81	19.92	20.51	20.93	18.78	21.43
48	17.54	21.19	21.35	21.66	11.52	12.10	11.40	20.91	21.53	21.95	19.69	22.47
50	18.41	22.23	22.39	22.72	12.17	12.76	12.01	21.94	22.58	23.00	20.63	23.54
52	19.32	23.31	23.47	23.80	12.84	13.44	12.64	23.01	23.67	24.10	21.60	24.65
54	20.26	24.43	24.59	24.93	13.54	14.15	13.30	24.12	24.81	25.23	22.60	25.80
56	21.23	25.58	25.74	26.09	14.27	14.88	13.98	25.27	25.98	26.39	23.63	26.98
58	22.23	26.77	26.92	27.29	15.02	15.63	14.68	26.46	27.19	27.60	24.69	28.21
60	23.26	28.00	28.15	28.53	15.81	16.42	15.41	27.70	28.45	28.84	25.78	29.47
62	24.33	29.28	29.42	29.81	16.62	17.23	16.16	28.98	29.76	30.12	26.91	30.76
64	25.43	30.59	30.72	31.12	17.45	18.07	16.94	30.31	31.12	31.44	28.07	32.10
66	26.57	31.94	32.07	32.48	18.32	18.94	17.74	31.69	32.53	32.80	29.27	33.48



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