

R-502 pressure–temperature chart

R-502 (R-22/115 azeotrope) — an azeotropic blend of R-22 and R-115, 48.8 / 51.2 % by mass. Also written R502. Bubble and dew pressures from −70 to 70 °C, every 2 K, in kPa gauge and bar gauge, computed with CoolProp.

SAFETY CLASS	GWP, 100-YEAR		ODP	
	A1 Lower toxicity, no flame propagation		0.334 Montreal Protocol	
BUBBLE POINT	DEW POINT		GLIDE	
	−44.78 °C At 101.325 kPa		0.47 K Dew less bubble, at 101.325 kPa	

BUBBLE · LIQUID					DEW · VAPOUR				
T (°C)	kPa g	bar g	kPa g	bar g	T (°C)	kPa g	bar g	kPa g	bar g
−70	−74.9	−0.75	−76.0	−0.76	2	491.4	4.91	488.6	4.89
−68	−71.5	−0.71	−72.7	−0.73	4	528.7	5.29	526.0	5.26
−66	−67.7	−0.68	−69.1	−0.69	6	567.7	5.68	565.0	5.65
−64	−63.6	−0.64	−65.1	−0.65	8	608.5	6.09	605.9	6.06
−62	−59.2	−0.59	−60.7	−0.61	10	651.1	6.51	648.5	6.49
−60	−54.2	−0.54	−55.8	−0.56	12	695.6	6.96	693.1	6.93
−58	−48.9	−0.49	−50.5	−0.51	14	742.0	7.42	739.5	7.40
−56	−43.0	−0.43	−44.8	−0.45	16	790.4	7.90	788.0	7.88
−54	−36.7	−0.37	−38.5	−0.39	18	840.8	8.41	838.5	8.38
−52	−29.8	−0.30	−31.7	−0.32	20	893.3	8.93	891.0	8.91
−50	−22.4	−0.22	−24.4	−0.24	22	947.9	9.48	945.7	9.46
−48	−14.3	−0.14	−16.4	−0.16	24	1,004.8	10.05	1,002.6	10.03
−46	−5.6	−0.06	−7.8	−0.08	26	1,063.8	10.64	1,061.7	10.62
−44	3.7	0.04	1.5	0.01	28	1,125.2	11.25	1,123.2	11.23
−42	13.8	0.14	11.5	0.11	30	1,188.9	11.89	1,187.0	11.87
−40	24.6	0.25	22.2	0.22	32	1,255.1	12.55	1,253.2	12.53
−38	36.2	0.36	33.7	0.34	34	1,323.7	13.24	1,321.9	13.22
−36	48.5	0.49	46.0	0.46	36	1,394.9	13.95	1,393.2	13.93
−34	61.8	0.62	59.2	0.59	38	1,468.6	14.69	1,467.0	14.67
−32	75.9	0.76	73.2	0.73	40	1,545.1	15.45	1,543.5	15.44
−30	90.9	0.91	88.2	0.88	42	1,624.3	16.24	1,622.8	16.23
−28	106.9	1.07	104.2	1.04	44	1,706.2	17.06	1,704.8	17.05
−26	123.9	1.24	121.1	1.21	46	1,791.1	17.91	1,789.8	17.90
−24	142.0	1.42	139.1	1.39	48	1,878.9	18.79	1,877.6	18.78
−22	161.1	1.61	158.3	1.58	50	1,969.8	19.70	1,968.5	19.69
−20	181.4	1.81	178.5	1.78	52	2,063.7	20.64	2,062.6	20.63
−18	202.8	2.03	199.9	2.00	54	2,160.9	21.61	2,159.8	21.60
−16	225.5	2.25	222.6	2.23	56	2,261.3	22.61	2,260.3	22.60
−14	249.4	2.49	246.5	2.46	58	2,365.2	23.65	2,364.1	23.64
−12	274.6	2.75	271.7	2.72	60	2,472.5	24.72	2,471.5	24.71
−10	301.2	3.01	298.2	2.98	62	2,583.4	25.83	2,582.5	25.82
−8	329.1	3.29	326.2	3.26	64	2,698.0	26.98	2,697.1	26.97
−6	358.5	3.59	355.6	3.56	66	2,816.5	28.17	2,815.6	28.16
−4	389.4	3.89	386.5	3.87	68	2,939.0	29.39	2,938.2	29.38
−2	421.8	4.22	419.0	4.19	70	3,065.7	30.66	3,064.9	30.65
0	455.8	4.56	453.0	4.53					

NOTES	Gauge pressure is absolute pressure less a standard atmosphere, 101.325 kPa; below it, gauge pressure is negative.	
	Bubble: saturated liquid — read subcooling from it. Dew: saturated vapour — read superheat from it.	
SOURCES	CoolProp could not solve the bubble line at 74–80 °C, or the dew line at 72 °C. Those rows are left out, not interpolated.	
	Computed with CoolProp 7.2.1dev (HEOS backend, MIT licence), from published equations of state.	
ONLINE	Cite: Bell, I.H., Wronski, J., Quoilin, S., Lemort, V. (2014). Pure and pseudo-pure fluid thermophysical property evaluation and the open-source thermophysical property library CoolProp. Ind. Eng. Chem. Res. 53(6), 2498–2508.	
	GWP, ODP, safety class and composition: UNEP RTOC 2018, IPCC AR4 (2007), IPCC AR6 (2021), Montreal Protocol, ASHRAE refrigerant designations, GHG Protocol (2024).	
VERIFY	kelvin.engineering/refrigerants/r-502 — this table in kPa absolute, and the P–h diagram	
	kelvin.engineering/tools/superheat-subcooling?r=r-502 — superheat and subcooling calculator	
	These figures must be verified by a qualified professional before they're relied on.	