

Table I. Two-Phase Heat Capacity $C_v^{(2)}$ and Heat Capacity of Saturated Liquid C_σ of R23

T_{avg} (K)	$\rho_{\sigma,\text{avg}}$ (mol \cdot L $^{-1}$)	$p_{\sigma,\text{avg}}^{\text{a,b}}$ (MPa)	$C_v^{(2)}$ (J \cdot mol $^{-1}$ \cdot K $^{-1}$)	C_σ (J \cdot mol $^{-1}$ \cdot K $^{-1}$)
120.6012	23.9166	0.0001	84.752	84.745
125.0614	23.7222	0.0002	84.312	84.300
129.4858	23.5261	0.0004	84.217	84.197
133.8703	23.3288	0.0007	84.103	84.071
138.2185	23.1304	0.0012	84.087	84.038
142.5308	22.9310	0.0019	84.002	83.931
146.8058	22.7310	0.0031	84.161	84.062
151.0343	22.5308	0.0048	83.928	83.794
155.2433	22.3292	0.0072	84.244	84.067
159.4146	22.1272	0.0105	84.403	84.176
163.5557	21.9244	0.0150	84.576	84.291
167.6643	21.7209	0.0209	84.927	84.577
171.7411	21.5167	0.0285	85.153	84.731
175.7796	21.3121	0.0382	85.421	84.922
179.7875	21.1066	0.0502	85.919	85.338
183.7601	20.9004	0.0650	86.423	85.759
187.7036	20.6930	0.0830	86.869	86.120
191.6161	20.4846	0.1045	87.293	86.460

195.5019 20.2747 0.1300 87.809 86.896
199.3516 20.0637 0.1598 88.473 87.486
203.1681 19.8513 0.1945 89.386 88.333
206.9596 19.6369 0.2344 90.108 89.000
210.7150 19.4208 0.2800 90.742 89.594
214.4421 19.2025 0.3316 91.198 90.030
218.1312 18.9822 0.3897 92.052 90.884
221.7941 18.7589 0.4547 92.789 91.648
225.4291 18.5326 0.5270 93.433 92.348
229.0344 18.3028 0.6070 94.290 93.299
232.6099 18.0693 0.6951 95.295 94.441
236.1588 17.8313 0.7916 96.131 95.464
239.6771 17.5886 0.8970 97.286 96.864
243.1680 17.3404 1.0115 98.133 98.025
246.6390 17.0855 1.1359 98.885 99.174
250.0674 16.8248 1.2697 99.903 100.683
253.4814 16.5551 1.4141 100.901 102.292
256.8607 16.2771 1.5688 102.213 104.356
260.2168 15.9886 1.7346 103.765 106.833
263.5495 15.6879 1.9118 104.746 108.956
266.8544 15.3738 2.1006 105.531 111.152
270.1301 15.0442 2.3011 106.836 114.213
122.9504 23.8146 0.0001 84.600 84.590

127.3893 23.6194 0.0003 84.297 84.281
131.7936 23.4226 0.0005 84.084 84.058
136.1634 23.2245 0.0009 83.867 83.827
140.4934 23.0255 0.0015 83.877 83.817
144.7892 22.8257 0.0025 83.864 83.779
153.2457 22.4251 0.0060 83.922 83.766
157.4309 22.2235 0.0088 84.281 84.078
161.5857 22.0211 0.0127 84.434 84.178
165.7065 21.8181 0.0179 84.617 84.298
169.7930 21.6146 0.0247 84.972 84.585
173.8498 21.4101 0.0333 85.322 84.860
177.8738 21.2050 0.0442 85.711 85.170
181.8615 20.9992 0.0576 86.301 85.677
185.8213 20.7923 0.0740 86.722 86.013
189.7509 20.5843 0.0937 87.055 86.262
193.6435 20.3755 0.1172 87.652 86.777
197.5054 20.1653 0.1449 88.394 87.442
201.3341 19.9538 0.1772 88.897 87.874
205.1318 19.7407 0.2145 89.635 88.552
208.8977 19.5258 0.2572 90.268 89.138
212.6369 19.3087 0.3058 90.766 89.605
216.3492 19.0891 0.3608 91.438 90.266
220.0255 18.8673 0.4223 92.370 91.212

223.6685 18.6428 0.4909 93.252 92.136
227.2861 18.4149 0.5671 94.011 92.970
230.8725 18.1835 0.6511 94.781 93.855
234.4263 17.9483 0.7433 95.880 95.115
237.9596 17.7080 0.8443 96.838 96.288
241.4604 17.4628 0.9542 97.668 97.396
244.9346 17.2118 1.0735 98.719 98.801
248.3844 16.9540 1.2026 99.717 100.242
251.8074 16.6887 1.3418 100.810 101.885
255.2008 16.4152 1.4913 102.087 103.841
258.5791 16.1310 1.6522 102.873 105.464
261.9293 15.8360 1.8241 104.155 107.778
265.2543 15.5280 2.0075 105.210 110.109
268.5435 15.2063 2.2022 107.030 113.506
265.1923 15.5339 2.0040 122.628 109.652
269.3848 15.1210 2.2542 126.184 113.819
273.5287 14.6796 2.5239 129.935 118.755
277.6144 14.2035 2.8130 133.476 124.342
281.6348 13.6825 3.1214 137.723 132.067
285.5785 13.0977 3.4486 143.539 144.070
289.4491 12.4047 3.7952 150.799 163.755
293.2072 11.5037 4.1577 159.927 202.991
267.2899 15.3311 2.1264 124.672 111.942

271.4707 14.9034 2.3871 128.163 116.306

275.5982 14.4442 2.6674 131.340 121.059

279.6566 13.9465 2.9666 135.849 128.241

283.6440 13.3959 3.2850 141.267 138.274

287.5645 12.7618 3.6232 147.162 152.848

291.3835 11.9817 3.9784 154.760 179.458

295.0715 10.8940 4.3477 167.026 241.192

^a Subscript *avg* denotes a condition evaluated at the average of the initial and final temperatures.

^b p_{σ} calculated from Ref. 9.

Table II. Heat Capacity C_v of Compressed Liquid and Gaseous R23

T_{avg}	ρ_{avg}	p_{avg}^a	C_v
(K)	(mol L^{-1})	(MPa)	(J $\text{mol}^{-1}\text{K}^{-1}$)
127.0061	24.2029	20.1515	53.55
124.9802	24.2211	14.9677	53.86
129.0482	24.1853	25.2563	53.32
145.8102	23.3298	18.5519	51.67
149.9108	23.2985	27.3681	51.64
143.4026	23.3491	13.2547	52.22
147.5204	23.3166	22.2634	51.57
166.1617	22.3541	16.2386	50.74
170.3094	22.3263	23.8285	50.61
164.1146	22.3684	12.4665	51.09
168.2773	22.3398	20.1297	50.58
172.4125	22.3126	27.6187	50.75
186.4013	21.3635	14.7050	50.13
190.5803	21.3392	21.1612	50.19
194.7322	21.3158	27.4710	50.27
184.3193	21.3761	11.4902	50.59
188.5168	21.3511	17.9818	50.09
192.6959	21.3272	24.3911	50.15

196.8426 21.3040 30.6417 50.51
206.2878 20.3352 13.1924 50.20
210.5006 20.3142 18.6237 50.13
214.6893 20.2940 23.9696 50.45
218.8487 20.2742 29.2105 50.69
226.0154 19.2371 11.7767 50.68
230.2627 19.2191 16.2775 50.64
234.4929 19.2019 20.7405 50.90
238.6993 19.1850 25.1334 51.08
242.8655 19.1685 29.4451 51.21
246.4589 17.9853 10.6206 51.67
250.7651 17.9703 14.2523 51.48
255.0460 17.9559 17.8687 51.61
259.3145 17.9419 21.4587 51.75
263.5407 17.9281 24.9854 52.07
267.7615 17.9145 28.4787 52.40
271.9454 17.9010 31.9233 52.66
266.4777 16.5501 9.4803 52.84
270.8690 16.5376 12.3251 52.82
275.2448 16.5259 15.1682 52.74
279.6004 16.5145 17.9971 52.86
283.9401 16.5033 20.8087 53.32
288.2649 16.4923 23.6000 53.62

292.5594 16.4813 26.3602 53.84
296.8377 16.4704 29.0989 54.28
301.1133 16.4596 31.8269 54.25
282.1566 14.7328 6.4766 55.05
286.6931 14.7191 8.5432 54.72
291.2173 14.7091 10.6230 54.39
295.7361 14.7000 12.7119 54.46
300.2487 14.6912 14.8046 54.57
304.7533 14.6826 16.8969 54.64
309.2484 14.6740 18.9857 54.64
313.7290 14.6655 21.0670 54.98
318.2098 14.6571 23.1465 55.23
322.6909 14.6487 25.2232 55.40
327.1644 14.6403 27.2926 55.65
331.6602 14.6318 29.3677 56.11
336.1689 14.6233 31.4431 56.49
340.7129 14.6148 33.5280 56.47
289.7340 14.0622 7.1848 55.79
294.4043 14.0508 9.0654 55.32
299.0838 14.0419 10.9668 55.12
303.7715 14.0335 12.8835 54.95
308.4535 14.0254 14.8057 54.95
313.1407 14.0174 16.7346 55.23

317.8329 14.0094 18.6678 55.15
322.5158 14.0014 20.5976 55.44
327.2102 13.9935 22.5313 55.73
331.9041 13.9856 24.4629 56.06
336.6037 13.9777 26.3944 56.25
341.3067 13.9698 28.3243 56.49
297.6856 13.1035 7.3991 57.04
302.4916 13.0938 9.0142 56.25
307.3258 13.0859 10.6563 56.09
312.1655 13.0785 12.3132 55.78
317.0186 13.0712 13.9840 55.88
321.8793 13.0641 15.6635 56.07
326.7482 13.0570 17.3497 55.84
331.6137 13.0500 19.0370 56.06
336.4836 13.0430 20.7271 56.08
341.3628 13.0359 22.4213 56.73
301.2179 11.5824 6.0742 59.81
306.1916 11.5735 7.3049 59.09
311.2022 11.5653 8.5659 58.17
316.2432 11.5586 9.8511 57.51
321.3083 11.5525 11.1554 57.51
326.3935 11.5465 12.4747 57.40
331.5024 11.5407 13.8075 57.16

336.6187 11.5348 15.1477 56.97
341.7584 11.5290 16.4979 57.14
306.2018 11.5735 7.3075 59.01
311.2360 11.5653 8.5745 58.21
316.2876 11.5586 9.8625 57.43
321.3697 11.5524 11.1713 57.33
326.4738 11.5465 12.4956 57.40
331.5958 11.5406 13.8320 57.44
336.7304 11.5347 15.1770 57.10
341.8805 11.5289 16.5300 56.99
305.9120 8.0973 5.6952 69.34
311.3572 8.0925 6.4186 64.98
316.9101 8.0869 7.1657 62.98
322.5377 8.0815 7.9294 61.30
328.2127 8.0767 8.7040 60.18
333.9414 8.0725 9.4892 60.04
339.7095 8.0686 10.2821 59.18
305.8892 8.0974 5.6922 69.62
311.3319 8.0925 6.4152 64.98
316.8740 8.0869 7.1608 62.61
322.4851 8.0815 7.9222 61.42
328.1678 8.0768 8.6979 60.58
333.8880 8.0726 9.4818 59.82

339.6369 8.0686 10.2721 59.15

^a Subscript *avg* denotes a condition evaluated at the average of the initial and final temperatures.

Table III. Vapor Pressures of R23 Derived from $U^{(2)}$ Measurements

T	$p_{\sigma, \text{pub.}}^{\text{a}}$	$p_{\sigma, \text{this work}}^{\text{b}}$	Dev. ^c
(K)	(Pa)		
190.000	94908.0	94859.3	48.7
189.000	89477.8	89428.9	48.9
188.000	84298.0	84248.1	49.9
187.000	79360.4	79308.7	51.7
186.000	74656.7	74602.7	54.0
185.000	70178.8	70122.1	56.7
184.000	65918.8	65859.0	59.8
183.000	61868.9	61805.8	63.2
182.000	58021.5	57954.9	66.6
181.000	54369.1	54298.9	70.1
180.000	50904.3	50830.7	73.6
179.000	47620.0	47543.1	77.0
178.000	44509.2	44429.1	80.1
177.000	41565.0	41482.0	83.0
176.000	38780.7	38695.1	85.6
175.000	36149.7	36061.9	87.9
174.000	33665.7	33576.0	89.7

173.000	31322.5	31231.3	91.1
172.000	29113.9	29021.8	92.1
171.000	27034.1	26941.5	92.6
170.000	25077.3	24984.6	92.7
169.000	23238.0	23145.7	92.3
168.000	21510.7	21419.3	91.4
167.000	19890.2	19800.1	90.1
166.000	18371.3	18283.0	88.3
165.000	16949.2	16863.0	86.2
164.000	15619.0	15535.3	83.7
163.000	14376.1	14295.3	80.8
162.000	13216.0	13138.4	77.6
161.000	12134.5	12060.3	74.1
160.000	11127.2	11056.8	70.4
159.000	10190.3	10123.8	66.5
158.000	9319.8	9257.4	62.4
157.000	8512.1	8453.9	58.2
156.000	7763.4	7709.6	53.9
155.000	7070.5	7021.0	49.5
154.000	6429.9	6384.8	45.1
153.000	5838.6	5797.8	40.8
152.000	5293.5	5257.0	36.5
151.000	4791.6	4759.4	32.2

150.000	4330.3	4302.2	28.1
149.000	3906.9	3882.8	24.1
148.000	3518.9	3498.5	20.3
147.000	3163.8	3147.1	16.7
146.000	2839.5	2826.2	13.2
145.000	2543.7	2533.6	10.0
144.000	2274.3	2267.3	7.0
143.000	2029.6	2025.3	4.2
142.000	1807.5	1805.8	1.7
141.000	1606.5	1607.1	-0.6
140.000	1424.8	1427.4	-2.6
139.000	1260.9	1265.3	-4.5
138.000	1113.3	1119.3	-6.0
137.000	980.8	988.2	-7.4
136.000	862.0	870.5	-8.5
135.000	755.7	765.2	-9.5
134.000	660.9	671.1	-10.2
133.000	576.5	587.3	-10.7
132.000	501.6	512.7	-11.1
131.000	435.2	446.5	-11.3
130.000	376.5	387.9	-11.4
129.000	324.8	336.2	-11.4
128.000	279.4	290.6	-11.2

127.000	239.6	250.5	-10.9
126.000	204.8	215.4	-10.6
125.000	174.5	184.6	-10.2
124.000	148.1	157.9	-9.7
123.000	125.4	134.6	-9.2
122.000	105.7	114.4	-8.7
121.000	88.8	96.9	-8.1
120.000	74.3	81.8	-7.5
119.000	61.9	68.9	-7.0
118.000	51.4	57.8	-6.4
118.020	51.6	58.0	-6.4

^a Eq. (9) fitted to data from Popowicz *et al.* [18]

^b Eq. (9) fitted to data from $U^{(2)}$ increments.

^c Dev. = $p_{\sigma, \text{Popowicz}} - p_{\sigma, U}$