Arcton

401A

THERMODYNAMIC PROPERTY DATA

SI UNITS

INEOS Fluor

ARCTON 401A

Saturated Liquid and Saturated Vapour Properties

R-401A Saturation Properties - Temperature Table

Temp. (°C)	Pressure		Density		Volume		Enthalpy			Entropy	
	Liquid	Vapour	Liquid	Vapour	Liquid	Vapour	Liquid	Latent	Vapour	Liquid	Vapour
	kpa	kpa	kg/m3	kg/m3	kg/m3	kg/m3	kj/kg	kj/kg	kj/kg	kj/K-kg	kj/K-kg
-100	1.40	0.697	1538	0.046	0.00065	21.840	87.25	259.65	346.9	0.489	2.026
-99	1.54	0.775	1536	0.051	0.00065	19.770	88.34	259.16	347.5	0.496	2.020
-98	1.69	0.860	1533	0.056	0.00065	17.910	89.42	258.58	348.0	0.502	2.014
-97	1.85	0.953	1531	0.062	0.00065	16.260	90.50	258.00	348.5	0.508	2.008
-96	2.02	1.054	1528	0.068	0.00065	14.780	91.59	257.51	349.1	0.514	2.002
-95	2.21	1.165	1526	0.074	0.00066	13.450	92.67	256.93	349.6	0.520	1.996
-94	2.41	1.285	1523	0.082	0.00066	12.250	93.75	256.45	350.2	0.526	1.991
-93	2.63	1.416	1521	0.089	0.00066	11.180	94.84	255.86	350.7	0.532	1.985
-92	2.87	1.559	1518	0.098	0.00066	10.210	95.92	255.28	351.2	0.538	1.980
-91	3.12	1.713	1516	0.107	0.00066	9.344	97.01	254.79	351.8	0.544	1.974
-90	3.39	1.880	1513	0.117	0.00066	8.558	98.09	254.21	352.3	0.550	1.969
-89	3.68	2.061	1511	0.127	0.00066	7.848	99.18	253.72	352.9	0.556	1.964
-88	4.00	2.257	1508	0.139	0.00066	7.205	100.30	253.10	353.4	0.562	1.959
-87	4.33	2.468	1506	0.151	0.00066	6.623	101.40	252.60	354.0	0.568	1.954
-86	4.69	2.696	1503	0.164	0.00067	6.095	102.40	252.10	354.5	0.574	1.949
-85	5.07	2.942	1501	0.178	0.00067	5.615	103.50	251.60	355.1	0.579	1.945
-84	5.48	3.206	1498	0.193	0.00067	5.178	104.60	251.00	355.6	0.585	1.940
-83	5.91	3.490	1495	0.209	0.00067	4.781	105.70	250.50	356.2	0.591	1.936
-82	6.38	3.796	1493	0.226	0.00067	4.419	106.80	249.90	356.7	0.597	1.931
-81	6.87	4.123	1490	0.245	0.00067	4.088	107.90	249.40	357.3	0.602	1.927
-80	7.40	4.474	1488	0.264	0.00067	3.786	109.00	248.80	357.8	0.608	1.922
-79	7.96	4.850	1485	0.285	0.00067	3.510	110.10	248.30	358.4	0.614	1.918
-78	8.55	5.251	1483	0.307	0.00067	3.257	111.20	247.70	358.9	0.619	1.914
-77	9.18	5.681	1480	0.331	0.00068	3.026	112.30	247.20	359.5	0.625	1.910
-76	9.85	6.140	1478	0.356	0.00068	2.813	113.30	246.80	360.1	0.630	1.906
-75	10.56	6.629	1475	0.382	0.00068	2.618	114.40	246.20	360.6	0.636	1.902
-74	11.31	7.150	1472	0.410	0.00068	2.439	115.50	245.70	361.2	0.641	1.898
-73	12.10	7.706	1470	0.440	0.00068	2.274	116.60	245.10	361.7	0.647	1.895
-72	12.94	8.296	1467	0.471	0.00068	2.122	117.70	244.60	362.3	0.652	1.891
-71	13.83	8.924	1465	0.505	0.00068	1.981	118.80	244.00	362.8	0.658	1.887
-70	14.76	9.591	1462	0.540	0.00068	1.852	119.90	243.50	363.4	0.663	1.884
-69	15.75	10.300	1460	0.577	0.00069	1.733	121.00	243.00	364.0	0.669	1.880
-68	16.80	11.050	1457	0.617	0.00069	1.622	122.10	242.40	364.5	0.674	1.877
-67	17.89	11.850	1454	0.658	0.00069	1.520	123.20	241.90	365.1	0.679	1.873
-66	19.05	12.690	1452	0.702	0.00069	1.425	124.30	241.30	365.6	0.685	1.870
-65	20.27	13.580	1449	0.748	0.00069	1.338	125.40	240.80	366.2	0.690	1.867
-64	21.55	14.520	1447	0.796	0.00069	1.256	126.50	240.30	366.8	0.695	1.864
-63	22.90	15.520	1444	0.847	0.00069	1.181	127.60	239.70	367.3	0.701	1.861
-62	24.31	16.570	1441	0.901	0.00069	1.111	128.70	239.20	367.9	0.706	1.858
-61	25.79	17.680	1439	0.957	0.00070	1.045	129.80	238.60	368.4	0.711	1.855
-60	27.35	18.850	1436	1.016	0.00070	0.985	130.90	238.10	369.0	0.716	1.852
-59	28.99	20.080	1433	1.078	0.00070	0.928	132.10	237.50	369.6	0.721	1.849
-58	30.70	21.370	1431	1.142	0.00070	0.875	133.20	236.90	370.1	0.727	1.846
-57	32.49	22.740	1428	1.210	0.00070	0.826	134.30	236.40	370.7	0.732	1.843
-56	34.37	24.170	1425	1.282	0.00070	0.780	135.40	235.80	371.2	0.737	1.840
-55	36.33	25.680	1423	1.356	0.00070	0.737	136.50	235.30	371.8	0.742	1.838
-54	38.39	27.260	1420	1.434	0.00070	0.697	137.60	234.80	372.4	0.747	1.835
-53	40.53	28.930	1417	1.516	0.00071	0.660	138.70	234.20	372.9	0.752	1.833
-52	42.77	30.670	1415	1.601	0.00071	0.625	139.80	233.70	373.5	0.757	1.830
-51	45.11	32.490	1412	1.690	0.00071	0.592	141.00	233.00	374.0	0.762	1.827
-50	47.56	34.410	1409	1.782	0.00071	0.561	142.10	232.50	374.6	0.767	1.825
-49	50.10	36.410	1407	1.879	0.00071	0.532	143.20	231.90	375.1	0.772	1.823
-48	52.76	38.510	1404	1.980	0.00071	0.505	144.30	231.40	375.7	0.777	1.820
-47	55.53	40.700	1401	2.085	0.00071	0.480	145.40	230.90	376.3	0.782	1.818
-46	58.41	43.000	1399	2.195	0.00071	0.456	146.50	230.30	376.8	0.787	1.816
-45	61.41	45.390	1396	2.309	0.00072	0.433	147.70	229.70	377.4	0.792	1.813
-44	64.53	47.900	1393	2.428	0.00072	0.412	148.80	229.10	377.9	0.797	1.811
-43	67.78	50.510	1391	2.551	0.00072	0.392	149.90	228.60	378.5	0.802	1.809
-42	71.16	53.230	1388	2.679	0.00072	0.373	151.10	227.90	379.0	0.807	1.807
-41	74.67	56.070	1385	2.813	0.00072	0.356	152.20	227.40	379.6	0.811	1.805

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Saturation Properties - Temperature Table

Temp. (°C)	Pressure		Density		Volume		Enthalpy			Entropy	
	Liquid	Vapour	Liquid	Vapour	Liquid	Vapour	Liquid	Latent	Vapour	Liquid	Vapour
	kpa	kpa	kg/m3	kg/m3	kg/m3	kg/m3	kj/kg	kj/kg	kj/kg	kj/K-kg	kj/K-kg
-40	78.31	59.030	1382	2.951	0.00072	0.339	153.30	226.90	380.2	0.816	1.803
-39	82.10	62.120	1380	3.095	0.00072	0.323	154.40	226.30	380.7	0.821	1.801
-38	86.03	65.330	1377	3.245	0.00073	0.308	155.60	225.70	381.3	0.826	1.799
-37	90.10	68.670	1374	3.400	0.00073	0.294	156.70	225.10	381.8	0.831	1.797
-36	94.33	72.140	1371	3.560	0.00073	0.281	157.80	224.60	382.4	0.836	1.795
-35	98.71	75.760	1368	3.727	0.00073	0.268	159.00	223.90	382.9	0.840	1.793
-34	103.20	79.520	1366	3.900	0.00073	0.256	160.10	223.40	383.5	0.845	1.791
-33	108.00	83.420	1363	4.079	0.00073	0.245	161.30	222.70	384.0	0.850	1.790
-32	112.80	87.470	1360	4.264	0.00074	0.235	162.40	222.20	384.6	0.855	1.788
-31	117.90	91.680	1357	4.456	0.00074	0.224	163.60	221.50	385.1	0.859	1.786
-30	123.10	96.040	1354	4.654	0.00074	0.215	164.70	220.90	385.6	0.864	1.784
-29	128.50	100.600	1352	4.860	0.00074	0.206	165.80	220.40	386.2	0.869	1.783
-28	134.00	105.300	1349	5.072	0.00074	0.197	167.00	219.70	386.7	0.873	1.781
-27	139.80	110.100	1346	5.292	0.00074	0.189	168.20	219.10	387.3	0.878	1.779
-26	145.80	115.200	1343	5.519	0.00074	0.181	169.30	218.50	387.8	0.883	1.778
-25	151.90	120.400	1340	5.753	0.00075	0.174	170.50	217.80	388.3	0.887	1.776
-24	158.30	125.800	1337	5.996	0.00075	0.167	171.60	217.30	388.9	0.892	1.775
-23	164.80	131.400	1334	6.246	0.00075	0.160	172.80	216.60	389.4	0.897	1.773
-22	171.60	137.200	1332	6.504	0.00075	0.154	173.90	216.10	390.0	0.901	1.772
-21	178.60	143.100	1329	6.770	0.00075	0.148	175.10	215.40	390.5	0.906	1.770
-20	185.80	149.300	1326	7.045	0.00075	0.142	176.30	214.70	391.0	0.910	1.769
-19	193.20	155.700	1323	7.329	0.00076	0.136	177.40	214.10	391.5	0.915	1.767
-18	200.80	162.300	1320	7.621	0.00076	0.131	178.60	213.50	392.1	0.920	1.766
-17	208.70	169.100	1317	7.923	0.00076	0.126	179.80	212.80	392.6	0.924	1.765
-16	216.80	176.100	1314	8.233	0.00076	0.122	180.90	212.20	393.1	0.929	1.763
-15	225.20	183.400	1311	8.553	0.00076	0.117	182.10	211.60	393.7	0.933	1.762
-14	233.80	190.900	1308	8.883	0.00076	0.113	183.30	210.90	394.2	0.938	1.761
-13	242.60	198.600	1305	9.223	0.00077	0.108	184.50	210.20	394.7	0.942	1.759
-12	251.70	206.500	1302	9.572	0.00077	0.105	185.60	209.60	395.2	0.947	1.758
-11	261.10	214.700	1299	9.932	0.00077	0.101	186.80	208.90	395.7	0.951	1.757
-10	270.70	223.200	1296	10.300	0.00077	0.097	188.00	208.20	396.2	0.956	1.756
-9	280.60	231.900	1293	10.680	0.00077	0.094	189.20	207.60	396.8	0.960	1.755
-8	290.80	240.900	1290	11.080	0.00078	0.090	190.40	206.90	397.3	0.965	1.753
-7	301.20	250.100	1287	11.480	0.00078	0.087	191.60	206.20	397.8	0.969	1.752
-6	312.00	259.600	1284	11.890	0.00078	0.084	192.80	205.50	398.3	0.974	1.751
-5	323.00	269.400	1281	12.320	0.00078	0.081	194.00	204.80	398.8	0.978	1.750
-4	334.30	279.400	1278	12.760	0.00078	0.078	195.20	204.10	399.3	0.982	1.749
-3	345.90	289.800	1275	13.210	0.00078	0.076	196.40	203.40	399.8	0.987	1.748
-2	357.90	300.400	1271	13.670	0.00079	0.073	197.60	202.70	400.3	0.991	1.747
-1	370.10	311.300	1268	14.150	0.00079	0.071	198.80	202.00	400.8	0.996	1.746
0	382.60	322.500	1265	14.630	0.00079	0.068	200.00	201.30	401.3	1.000	1.745
1	395.50	334.100	1262	15.140	0.00079	0.066	201.20	200.60	401.8	1.004	1.743
2	408.70	345.900	1259	15.650	0.00079	0.064	202.40	199.90	402.3	1.009	1.742
3	422.20	358.100	1256	16.180	0.00080	0.062	203.60	199.10	402.7	1.013	1.741
4	436.10	370.500	1252	16.720	0.00080	0.060	204.90	198.30	403.2	1.018	1.740
5	450.30	383.400	1249	17.280	0.00080	0.058	206.10	197.60	403.7	1.022	1.739
6	464.80	396.500	1246	17.850	0.00080	0.056	207.30	196.90	404.2	1.026	1.738
7	479.70	410.000	1243	18.440	0.00080	0.054	208.50	196.20	404.7	1.031	1.738
8	494.90	423.800	1239	19.040	0.00081	0.053	209.80	195.30	405.1	1.035	1.737
9	510.50	438.000	1236	19.660	0.00081	0.051	211.00	194.60	405.6	1.039	1.736
10	526.50	452.500	1233	20.290	0.00081	0.049	212.20	193.90	406.1	1.044	1.735
11	542.90	467.400	1230	20.940	0.00081	0.048	213.50	193.00	406.5	1.048	1.734
12	559.60	482.700	1226	21.600	0.00082	0.046	214.70	192.30	407.0	1.052	1.733
13	576.70	498.300	1223	22.290	0.00082	0.045	216.00	191.50	407.5	1.057	1.732
14	594.20	514.300	1220	22.990	0.00082	0.044	217.20	190.70	407.9	1.061	1.731
15	612.10	530.800	1216	23.700	0.00082	0.042	218.50	189.90	408.4	1.065	1.730
16	630.40	547.500	1213	24.440	0.00082	0.041	219.70	189.10	408.8	1.069	1.729
17	649.10	564.700	1209	25.190	0.00083	0.040	221.00	188.30	409.3	1.074	1.729
18	668.20	582.300	1206	25.970	0.00083	0.039	222.20	187.50	409.7	1.078	1.728
19	687.70	600.300	1202	26.760	0.00083	0.037	223.50	186.60	410.1	1.082	1.727

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	Liquid	Vapour	Liquid	Vapour	Liquid	Vapour	Liquid	Latent	Vapour	Liquid	Vapour
	kpa	kpa	kg/m3	kg/m3	kg/m3	kg/m3	kj/kg	kj/kg	kj/kg	kj/K-kg	kj/K-kg
20	707.60	618.800	1199	27.570	0.00083	0.036	224.80	185.80	410.6	1.087	1.726
21	728.00	637.600	1195	28.400	0.00084	0.035	226.00	185.00	411.0	1.091	1.725
22	748.80	656.900	1192	29.250	0.00084	0.034	227.30	184.10	411.4	1.095	1.724
23	770.00	676.600	1188	30.120	0.00084	0.033	228.60	183.30	411.9	1.099	1.724
24	791.70	696.700	1185	31.020	0.00084	0.032	229.90	182.40	412.3	1.104	1.723
25	813.80	717.300	1181	31.930	0.00085	0.031	231.10	181.60	412.7	1.108	1.722
26	836.40	738.400	1178	32.870	0.00085	0.030	232.40	180.70	413.1	1.112	1.721
27	859.50	759.900	1174	33.830	0.00085	0.030	233.70	179.80	413.5	1.116	1.720
28	883.00	781.900	1170	34.810	0.00085	0.029	235.00	178.90	413.9	1.121	1.720
29	907.00	804.300	1167	35.820	0.00086	0.028	236.30	178.00	414.3	1.125	1.719
30	931.40	827.200	1163	36.850	0.00086	0.027	237.60	177.10	414.7	1.129	1.718
31	956.40	850.600	1159	37.910	0.00086	0.026	238.90	176.20	415.1	1.133	1.717
32	981.80	874.600	1156	38.990	0.00087	0.026	240.20	175.30	415.5	1.138	1.716
33	1008.00	899.000	1152	40.100	0.00087	0.025	241.60	174.30	415.9	1.142	1.716
34	1034.00	923.900	1148	41.240	0.00087	0.024	242.90	173.30	416.2	1.146	1.715
35	1061.00	949.300	1144	42.400	0.00087	0.024	244.20	172.40	416.6	1.150	1.714
36	1089.00	975.200	1140	43.590	0.00088	0.023	245.50	171.50	417.0	1.154	1.713
37	1117.00	1002.000	1137	44.810	0.00088	0.022	246.90	170.40	417.3	1.159	1.713
38	1145.00	1029.000	1133	46.060	0.00088	0.022	248.20	169.50	417.7	1.163	1.712
39	1174.00	1056.000	1129	47.330	0.00089	0.021	249.50	168.50	418.0	1.167	1.711
40	1204.00	1084.000	1125	48.640	0.00089	0.021	250.90	167.50	418.4	1.171	1.710
41	1234.00	1113.000	1121	49.980	0.00089	0.020	252.20	166.50	418.7	1.176	1.710
42	1265.00	1142.000	1117	51.360	0.00090	0.019	253.60	165.50	419.1	1.180	1.709
43	1296.00	1172.000	1113	52.770	0.00090	0.019	254.90	164.50	419.4	1.184	1.708
44	1328.00	1202.000	1109	54.210	0.00090	0.018	256.30	163.40	419.7	1.188	1.707
45	1360.00	1233.000	1104	55.680	0.00091	0.018	257.70	162.30	420.0	1.192	1.706
46	1393.00	1265.000	1100	57.200	0.00091	0.017	259.10	161.20	420.3	1.197	1.706
47	1426.00	1297.000	1096	58.750	0.00091	0.017	260.40	160.20	420.6	1.201	1.705
48	1461.00	1330.000	1092	60.330	0.00092	0.017	261.80	159.10	420.9	1.205	1.704
49	1495.00	1363.000	1088	61.960	0.00092	0.016	263.20	158.00	421.2	1.209	1.703
50	1531.00	1397.000	1083	63.630	0.00092	0.016	264.60	156.90	421.5	1.214	1.703
51	1566.00	1431.000	1079	65.340	0.00093	0.015	266.00	155.80	421.8	1.218	1.702
52	1603.00	1467.000	1075	67.090	0.00093	0.015	267.40	154.70	422.1	1.222	1.701
53	1640.00	1502.000	1070	68.890	0.00093	0.015	268.80	153.50	422.3	1.226	1.700
54	1678.00	1539.000	1066	70.730	0.00094	0.014	270.30	152.30	422.6	1.230	1.699
55	1716.00	1576.000	1061	72.620	0.00094	0.014	271.70	151.10	422.8	1.235	1.698
56	1755.00	1614.000	1056	74.560	0.00095	0.013	273.10	149.90	423.0	1.239	1.698
57	1795.00	1653.000	1052	76.550	0.00095	0.013	274.60	148.70	423.3	1.243	1.697
58	1836.00	1692.000	1047	78.590	0.00095	0.013	276.00	147.50	423.5	1.247	1.696
59	1877.00	1732.000	1042	80.690	0.00096	0.012	277.50	146.20	423.7	1.252	1.695
60	1918.00	1772.000	1038	82.840	0.00096	0.012	278.90	145.00	423.9	1.256	1.694
61	1961.00	1814.000	1033	85.050	0.00097	0.012	280.40	143.70	424.1	1.260	1.693
62	2004.00	1856.000	1028	87.310	0.00097	0.011	281.90	142.30	424.2	1.265	1.692
63	2047.00	1899.000	1023	89.640	0.00098	0.011	283.40	141.00	424.4	1.269	1.691
64	2092.00	1942.000	1018	92.040	0.00098	0.011	284.90	139.70	424.6	1.273	1.690
65	2137.00	1986.000	1013	94.500	0.00099	0.011	286.40	138.30	424.7	1.278	1.689
66	2183.00	2031.000	1007	97.030	0.00099	0.010	287.90	136.90	424.8	1.282	1.688
67	2230.00	2077.000	1002	99.630	0.00100	0.010	289.40	135.50	424.9	1.286	1.687
68	2277.00	2124.000	996.8	102.300	0.00100	0.010	290.90	134.20	425.1	1.291	1.686
69	2325.00	2171.000	991.4	105.100	0.00101	0.010	292.50	132.60	425.1	1.295	1.685
70	2374.00	2219.000	985.9	107.900	0.00101	0.009	294.00	131.20	425.2	1.299	1.684
71	2423.00	2268.000	980.3	110.800	0.00102	0.009	295.60	129.70	425.3	1.304	1.683
72	2474.00	2318.000	974.6	113.900	0.00103	0.009	297.20	128.10	425.3	1.308	1.682
73	2525.00	2369.000	968.8	117.000	0.00103	0.009	298.80	126.60	425.4	1.313	1.681
74	2577.00	2420.000	962.9	120.200	0.00104	0.008	300.40	125.00	425.4	1.317	1.679
75	2629.00	2473.000	956.9	123.500	0.00105	0.008	302.00	123.40	425.4	1.322	1.678
76	2683.00	2526.000	950.8	126.900	0.00105	0.008	303.60	121.70	425.3	1.326	1.677
77	2737.00	2580.000	944.5	130.500	0.00106	0.008	305.30	120.00	425.3	1.331	1.675
78	2792.00	2635.000	938.1	134.100	0.00107	0.007	306.90	118.30	425.2	1.335	1.674
79	2848.00	2691.000	931.6	137.900	0.00107	0.007	308.60	116.50	425.1	1.340	1.673

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Saturation Properties - Temperature Table

Temp. (°C)	Pressure		Density		Volume		Enthalpy			Entropy	
	Liquid	Vapour	Liquid	Vapour	Liquid	Vapour	Liquid	Latent	Vapour	Liquid	Vapour
	kpa	kpa	kg/m3	kg/m3	kg/m3	kg/m3	kj/kg	kj/kg	kj/kg	kj/K-kg	kj/K-kg
80	2905.00	2748.000	924.9	141.800	0.00108	0.007	310.30	114.70	425.0	1.345	1.671
81	2962.00	2806.000	918.1	145.900	0.00109	0.007	312.00	112.90	424.9	1.349	1.670
82	3021.00	2865.000	911.1	150.200	0.00110	0.007	313.80	110.90	424.7	1.354	1.668
83	3080.00	2925.000	903.9	154.600	0.00111	0.006	315.50	109.00	424.5	1.359	1.666
84	3140.00	2986.000	896.6	159.100	0.00112	0.006	317.30	107.00	424.3	1.363	1.665
85	3201.00	3047.000	889.0	163.900	0.00112	0.006	319.10	104.90	424.0	1.368	1.663
86	3263.00	3110.000	881.2	168.900	0.00113	0.006	320.90	102.80	423.7	1.373	1.661
87	3326.00	3174.000	873.1	174.100	0.00115	0.006	322.80	100.60	423.4	1.378	1.659
88	3390.00	3239.000	864.8	179.600	0.00116	0.006	324.70	98.30	423.0	1.383	1.657
89	3454.00	3305.000	856.1	185.300	0.00117	0.005	326.60	96.00	422.6	1.388	1.655
90	3520.00	3373.000	847.2	191.300	0.00118	0.005	328.60	93.60	422.2	1.394	1.653
91	3586.00	3441.000	837.8	197.700	0.00119	0.005	330.60	91.00	421.6	1.399	1.650
92	3654.00	3511.000	828.1	204.400	0.00121	0.005	332.60	88.50	421.1	1.404	1.648
93	3722.00	3582.000	817.9	211.600	0.00122	0.005	334.70	85.70	420.4	1.410	1.645
94	3791.00	3654.000	807.1	219.200	0.00124	0.005	336.90	82.80	419.7	1.415	1.642
95	3861.00	3727.000	795.7	227.400	0.00126	0.004	339.10	79.80	418.9	1.421	1.639
96	3933.00	3802.000	783.6	236.100	0.00128	0.004	341.40	76.50	417.9	1.427	1.635
97	4005.00	3879.000	770.6	245.700	0.00130	0.004	343.80	73.10	416.9	1.433	1.632
98	4078.00	3956.000	756.6	256.100	0.00132	0.004	346.30	69.40	415.7	1.440	1.628
99	4152.00	4036.000	741.3	267.700	0.00135	0.004	349.00	65.30	414.3	1.447	1.623

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

ARCTON 401A

Superheated Vapour Properties

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	10 kpa			20 kpa			30 kpa			40 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-65	1.821	366.4	1.894									
-60	1.865	369.4	1.909									
-55	1.910	372.4	1.923	0.950	372.0	1.861						
-50	1.955	375.5	1.937	0.973	375.1	1.875	0.645	374.8	1.838			
-45	1.999	378.6	1.951	0.995	378.3	1.889	0.660	377.9	1.852	0.493	377.6	1.825
-40	2.044	381.8	1.964	1.018	381.4	1.902	0.676	381.1	1.866	0.504	380.8	1.839
-35	2.088	385.0	1.978	1.040	384.7	1.916	0.691	384.4	1.879	0.516	384.0	1.853
-30	2.133	388.2	1.991	1.063	387.9	1.929	0.706	387.6	1.893	0.527	387.3	1.867
-25	2.177	391.4	2.005	1.085	391.2	1.943	0.721	390.9	1.906	0.539	390.6	1.880
-20	2.222	394.7	2.018	1.107	394.5	1.956	0.736	394.2	1.919	0.550	394.0	1.893
-15	2.266	398.1	2.031	1.130	397.8	1.969	0.751	397.6	1.933	0.562	397.3	1.907
-10	2.310	401.4	2.044	1.152	401.2	1.982	0.766	401.0	1.946	0.573	400.7	1.920
-5	2.355	404.8	2.056	1.174	404.6	1.995	0.781	404.4	1.958	0.584	404.2	1.933
0	2.399	408.3	2.069	1.197	408.1	2.007	0.796	407.8	1.971	0.595	407.6	1.945
5	2.443	411.7	2.082	1.219	411.5	2.020	0.811	411.3	1.984	0.607	411.1	1.958
10	2.488	415.2	2.094	1.241	415.0	2.033	0.826	414.9	1.996	0.618	414.7	1.971
15	2.532	418.8	2.107	1.263	418.6	2.045	0.841	418.4	2.009	0.629	418.2	1.983
20	2.576	422.3	2.119	1.286	422.2	2.057	0.856	422.0	2.021	0.640	421.8	1.996
25	2.620	426.0	2.131	1.308	425.8	2.070	0.870	425.6	2.034	0.652	425.5	2.008
30	2.665	429.6	2.143	1.330	429.4	2.082	0.885	429.3	2.046	0.663	429.1	2.020
35	2.709	433.3	2.155	1.352	433.1	2.094	0.900	433.0	2.058	0.674	432.8	2.032
40	2.753	437.0	2.167	1.374	436.8	2.106	0.915	436.7	2.070	0.685	436.6	2.044
45	2.797	440.7	2.179	1.397	440.6	2.118	0.930	440.5	2.082	0.696	440.3	2.056
50	2.841	444.5	2.191	1.419	444.4	2.129	0.945	444.3	2.093	0.708	444.1	2.068
55	2.885	448.3	2.203	1.441	448.2	2.141	0.959	448.1	2.105	0.719	448.0	2.080
60	2.930	452.2	2.214	1.463	452.1	2.153	0.974	451.9	2.117	0.730	451.8	2.091
65	2.974	456.1	2.226	1.485	455.9	2.164	0.989	455.8	2.129	0.741	455.7	2.103
70	3.018	460.0	2.237	1.507	459.9	2.176	1.004	459.8	2.140	0.752	459.6	2.114
75	3.062	463.9	2.249	1.529	463.8	2.187	1.019	463.7	2.151	0.763	463.6	2.126
80	3.106	467.9	2.260	1.552	467.8	2.199	1.033	467.7	2.163	0.774	467.6	2.137
85	3.150	471.9	2.271	1.574	471.8	2.210	1.048	471.7	2.174	0.785	471.6	2.149
90	3.194	476.0	2.283	1.596	475.9	2.221	1.063	475.8	2.185	0.797	475.7	2.160
95	3.238	480.1	2.294	1.618	480.0	2.232	1.078	479.9	2.197	0.808	479.8	2.171
100	3.283	484.2	2.305	1.640	484.1	2.244	1.092	484.0	2.208	0.819	483.9	2.182

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	50 kpa			60 kpa			70 kpa			80 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-40	0.402	380.5	1.819									
-35	0.411	383.7	1.832	0.341	383.4	1.815						
-30	0.420	387.0	1.846	0.349	386.7	1.829	0.298	386.4	1.815	0.260	386.1	1.802
-25	0.430	390.4	1.860	0.357	390.1	1.843	0.305	389.8	1.828	0.266	389.5	1.816
-20	0.439	393.7	1.873	0.364	393.5	1.856	0.311	393.2	1.842	0.272	392.9	1.829
-15	0.448	397.1	1.886	0.372	396.9	1.870	0.318	396.6	1.855	0.277	396.4	1.843
-10	0.457	400.5	1.899	0.380	400.3	1.883	0.325	400.0	1.868	0.283	399.8	1.856
-5	0.466	404.0	1.912	0.387	403.7	1.896	0.331	403.5	1.882	0.289	403.3	1.869
0	0.475	407.4	1.925	0.395	407.2	1.909	0.338	407.0	1.894	0.295	406.8	1.882
5	0.484	410.9	1.938	0.403	410.7	1.921	0.344	410.6	1.907	0.301	410.4	1.895
10	0.493	414.5	1.951	0.410	414.3	1.934	0.351	414.1	1.920	0.306	413.9	1.908
15	0.502	418.1	1.963	0.418	417.9	1.947	0.357	417.7	1.933	0.312	417.5	1.920
20	0.511	421.7	1.975	0.425	421.5	1.959	0.364	421.3	1.945	0.318	421.2	1.933
25	0.520	425.3	1.988	0.433	425.1	1.971	0.370	425.0	1.957	0.324	424.8	1.945
30	0.529	429.0	2.000	0.440	428.8	1.984	0.377	428.7	1.970	0.329	428.5	1.958
35	0.538	432.7	2.012	0.448	432.5	1.996	0.383	432.4	1.982	0.335	432.2	1.970
40	0.547	436.4	2.024	0.455	436.3	2.008	0.390	436.1	1.994	0.341	436.0	1.982
45	0.556	440.2	2.036	0.463	440.1	2.020	0.396	439.9	2.006	0.346	439.8	1.994
50	0.565	444.0	2.048	0.470	443.9	2.032	0.403	443.7	2.018	0.352	443.6	2.006
55	0.574	447.8	2.060	0.478	447.7	2.043	0.409	447.6	2.030	0.358	447.4	2.018
60	0.583	451.7	2.071	0.485	451.6	2.055	0.416	451.5	2.041	0.363	451.3	2.029
65	0.592	455.6	2.083	0.493	455.5	2.067	0.422	455.4	2.053	0.369	455.2	2.041
70	0.601	459.5	2.095	0.500	459.4	2.078	0.428	459.3	2.064	0.374	459.2	2.053
75	0.610	463.5	2.106	0.508	463.4	2.090	0.435	463.3	2.076	0.380	463.2	2.064
80	0.619	467.5	2.117	0.515	467.4	2.101	0.441	467.3	2.087	0.386	467.2	2.075
85	0.628	471.5	2.129	0.523	471.4	2.113	0.448	471.3	2.099	0.391	471.2	2.087
90	0.637	475.6	2.140	0.530	475.5	2.124	0.454	475.4	2.110	0.397	475.3	2.098
95	0.646	479.7	2.151	0.537	479.6	2.135	0.460	479.5	2.121	0.402	479.4	2.109
100	0.654	483.8	2.162	0.545	483.7	2.146	0.467	483.6	2.132	0.408	483.5	2.120
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.672	492.2	2.184	0.560	492.1	2.168	0.479	492.0	2.155	0.419	491.9	2.143
115				0.567	496.3	2.179	0.486	496.2	2.165	0.425	496.1	2.154
120							0.492	500.5	2.176	0.430	500.4	2.164

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	90 kpa			100 kpa			101.325kpa			110 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-25	0.235	389.2	1.805	0.211	388.9	1.794	0.208	388.9	1.793			
-20	0.241	392.7	1.818	0.216	392.4	1.808	0.213	392.4	1.807	0.195	392.1	1.799
-15	0.246	396.1	1.832	0.221	395.9	1.822	0.218	395.8	1.820	0.200	395.6	1.813
-10	0.251	399.6	1.845	0.225	399.3	1.835	0.222	399.3	1.834	0.204	399.1	1.826
-5	0.256	403.1	1.858	0.230	402.8	1.848	0.227	402.8	1.847	0.208	402.6	1.839
0	0.261	406.6	1.871	0.235	406.4	1.861	0.232	406.4	1.860	0.213	406.2	1.852
5	0.267	410.2	1.884	0.239	409.9	1.874	0.236	409.9	1.873	0.217	409.7	1.865
10	0.272	413.7	1.897	0.244	413.5	1.887	0.241	413.5	1.886	0.221	413.3	1.878
15	0.277	417.3	1.910	0.249	417.2	1.900	0.245	417.1	1.899	0.226	417.0	1.891
20	0.282	421.0	1.922	0.253	420.8	1.912	0.250	420.8	1.911	0.230	420.6	1.904
25	0.287	424.7	1.934	0.258	424.5	1.925	0.254	424.5	1.924	0.234	424.3	1.916
30	0.292	428.4	1.947	0.262	428.2	1.937	0.259	428.2	1.936	0.238	428.0	1.928
35	0.297	432.1	1.959	0.267	431.9	1.949	0.263	431.9	1.948	0.242	431.8	1.941
40	0.302	435.8	1.971	0.272	435.7	1.961	0.268	435.7	1.960	0.247	435.6	1.953
45	0.307	439.6	1.983	0.276	439.5	1.974	0.273	439.5	1.972	0.251	439.4	1.965
50	0.312	443.5	1.995	0.281	443.3	1.985	0.277	443.3	1.984	0.255	443.2	1.977
55	0.317	447.3	2.007	0.285	447.2	1.997	0.282	447.2	1.996	0.259	447.1	1.989
60	0.322	451.2	2.019	0.290	451.1	2.009	0.286	451.1	2.008	0.263	451.0	2.000
65	0.327	455.1	2.030	0.294	455.0	2.021	0.290	455.0	2.020	0.267	454.9	2.012
70	0.332	459.1	2.042	0.299	459.0	2.032	0.295	458.9	2.031	0.271	458.8	2.024
75	0.337	463.1	2.053	0.303	462.9	2.044	0.299	462.9	2.043	0.276	462.8	2.035
80	0.342	467.1	2.065	0.308	467.0	2.055	0.304	466.9	2.054	0.280	466.9	2.047
85	0.347	471.1	2.076	0.312	471.0	2.067	0.308	471.0	2.066	0.284	470.9	2.058
90	0.352	475.2	2.088	0.317	475.1	2.078	0.313	475.1	2.077	0.288	475.0	2.069
95	0.357	479.3	2.099	0.321	479.2	2.089	0.317	479.2	2.088	0.292	479.1	2.081
100	0.362	483.4	2.110	0.326	483.3	2.100	0.322	483.3	2.099	0.296	483.2	2.092
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.372	491.8	2.132	0.335	491.7	2.123	0.330	491.7	2.121	0.304	491.6	2.114
115	0.377	496.0	2.143	0.339	495.9	2.134	0.335	495.9	2.132	0.308	495.9	2.125
120	0.382	500.3	2.154	0.344	500.2	2.145	0.339	500.2	2.143	0.312	500.1	2.136
125	0.387	504.6	2.165	0.348	504.5	2.155	0.344	504.5	2.154	0.316	504.4	2.147
130										0.321	508.8	2.158

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	120 kpa			130 kpa			140 kpa			150 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-20	0.179	391.8	1.791	0.164	391.6	1.783						
-15	0.183	395.3	1.804	0.168	395.1	1.796	0.155	394.8	1.789	0.145	394.6	1.782
-10	0.187	398.9	1.818	0.172	398.6	1.810	0.159	398.4	1.803	0.148	398.1	1.796
-5	0.191	402.4	1.831	0.175	402.2	1.823	0.162	401.9	1.816	0.151	401.7	1.810
0	0.195	406.0	1.844	0.179	405.7	1.837	0.166	405.5	1.829	0.154	405.3	1.823
5	0.199	409.5	1.857	0.183	409.3	1.850	0.169	409.1	1.843	0.158	408.9	1.836
10	0.202	413.2	1.870	0.186	413.0	1.863	0.173	412.8	1.856	0.161	412.6	1.849
15	0.206	416.8	1.883	0.190	416.6	1.875	0.176	416.4	1.868	0.164	416.2	1.862
20	0.210	420.5	1.895	0.194	420.3	1.888	0.179	420.1	1.881	0.167	419.9	1.874
25	0.214	424.2	1.908	0.197	424.0	1.900	0.183	423.8	1.894	0.170	423.7	1.887
30	0.218	427.9	1.920	0.201	427.7	1.913	0.186	427.6	1.906	0.173	427.4	1.900
35	0.222	431.6	1.933	0.204	431.5	1.925	0.190	431.3	1.918	0.177	431.2	1.912
40	0.226	435.4	1.945	0.208	435.3	1.937	0.193	435.1	1.931	0.180	435.0	1.924
45	0.229	439.2	1.957	0.212	439.1	1.949	0.196	438.9	1.943	0.183	438.8	1.936
50	0.233	443.1	1.969	0.215	442.9	1.961	0.199	442.8	1.955	0.186	442.7	1.948
55	0.237	446.9	1.981	0.219	446.8	1.973	0.203	446.7	1.967	0.189	446.5	1.960
60	0.241	450.8	1.993	0.222	450.7	1.985	0.206	450.6	1.978	0.192	450.5	1.972
65	0.245	454.8	2.004	0.226	454.6	1.997	0.209	454.5	1.990	0.195	454.4	1.984
70	0.249	458.7	2.016	0.229	458.6	2.009	0.213	458.5	2.002	0.198	458.4	1.995
75	0.252	462.7	2.027	0.233	462.6	2.020	0.216	462.5	2.013	0.201	462.4	2.007
80	0.256	466.8	2.039	0.236	466.6	2.032	0.219	466.5	2.025	0.204	466.4	2.019
85	0.260	470.8	2.050	0.240	470.7	2.043	0.222	470.6	2.036	0.207	470.5	2.030
90	0.264	474.9	2.062	0.243	474.8	2.054	0.226	474.7	2.048	0.210	474.6	2.041
95	0.267	479.0	2.073	0.247	478.9	2.066	0.229	478.8	2.059	0.213	478.7	2.053
100	0.271	483.2	2.084	0.250	483.1	2.077	0.232	483.0	2.070	0.216	482.9	2.064
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.279	491.5	2.106	0.257	491.5	2.099	0.238	491.4	2.092	0.222	491.3	2.086
115	0.282	495.8	2.117	0.260	495.7	2.110	0.242	495.6	2.103	0.225	495.5	2.097
120	0.286	500.0	2.128	0.264	500.0	2.121	0.245	499.9	2.114	0.228	499.8	2.108
125	0.290	504.3	2.139	0.267	504.3	2.132	0.248	504.2	2.125	0.231	504.1	2.119
130	0.294	508.7	2.150	0.271	508.6	2.143	0.251	508.5	2.136	0.234	508.4	2.130
135							0.255	512.9	2.147	0.237	512.8	2.141

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	160 kpa			170 kpa			180 kpa			190 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-15	0.135	394.3	1.776									
-10	0.138	397.9	1.790	0.130	397.6	1.784	0.122	397.4	1.778	0.115	397.1	1.772
-5	0.141	401.5	1.803	0.133	401.2	1.797	0.125	401.0	1.792	0.118	400.8	1.786
0	0.144	405.1	1.817	0.136	404.9	1.811	0.128	404.6	1.805	0.121	404.4	1.800
5	0.147	408.7	1.830	0.138	408.5	1.824	0.130	408.3	1.818	0.123	408.1	1.813
10	0.150	412.4	1.843	0.141	412.2	1.837	0.133	412.0	1.831	0.126	411.8	1.826
15	0.153	416.1	1.856	0.144	415.9	1.850	0.136	415.7	1.844	0.128	415.5	1.839
20	0.156	419.8	1.868	0.147	419.6	1.863	0.138	419.4	1.857	0.131	419.2	1.852
25	0.159	423.5	1.881	0.150	423.3	1.875	0.141	423.1	1.870	0.133	423.0	1.865
30	0.162	427.2	1.893	0.153	427.1	1.888	0.144	426.9	1.882	0.136	426.7	1.877
35	0.165	431.0	1.906	0.155	430.9	1.900	0.146	430.7	1.895	0.138	430.6	1.890
40	0.168	434.8	1.918	0.158	434.7	1.912	0.149	434.5	1.907	0.141	434.4	1.902
45	0.171	438.7	1.930	0.161	438.5	1.925	0.152	438.4	1.919	0.143	438.2	1.914
50	0.174	442.5	1.942	0.164	442.4	1.937	0.154	442.3	1.931	0.146	442.1	1.926
55	0.177	446.4	1.954	0.166	446.3	1.949	0.157	446.2	1.943	0.148	446.0	1.938
60	0.180	450.3	1.966	0.169	450.2	1.961	0.159	450.1	1.955	0.151	450.0	1.950
65	0.183	454.3	1.978	0.172	454.2	1.972	0.162	454.1	1.967	0.153	453.9	1.962
70	0.186	458.3	1.990	0.174	458.2	1.984	0.165	458.0	1.979	0.156	457.9	1.974
75	0.188	462.3	2.001	0.177	462.2	1.996	0.167	462.1	1.990	0.158	461.9	1.985
80	0.191	466.3	2.013	0.180	466.2	2.007	0.170	466.1	2.002	0.161	466.0	1.997
85	0.194	470.4	2.024	0.183	470.3	2.019	0.172	470.2	2.013	0.163	470.1	2.008
90	0.197	474.5	2.036	0.185	474.4	2.030	0.175	474.3	2.025	0.165	474.2	2.020
95	0.200	478.6	2.047	0.188	478.5	2.041	0.177	478.4	2.036	0.168	478.3	2.031
100	0.203	482.8	2.058	0.191	482.7	2.053	0.180	482.6	2.047	0.170	482.5	2.042
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.208	491.2	2.080	0.196	491.1	2.075	0.185	491.0	2.070	0.175	490.9	2.065
115	0.211	495.4	2.091	0.199	495.4	2.086	0.187	495.3	2.081	0.177	495.2	2.076
120	0.214	499.7	2.102	0.201	499.6	2.097	0.190	499.6	2.092	0.180	499.5	2.087
125	0.217	504.0	2.113	0.204	503.9	2.108	0.193	503.9	2.102	0.182	503.8	2.098
130	0.220	508.4	2.124	0.207	508.3	2.118	0.195	508.2	2.113	0.185	508.1	2.108
135	0.222	512.7	2.135	0.209	512.7	2.129	0.198	512.6	2.124	0.187	512.5	2.119
140				0.212	517.1	2.140	0.200	517.0	2.135	0.189	516.9	2.130

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	200 kpa			210 kpa			210 kpa			230 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-10	0.109	396.9	1.767									
-5	0.112	400.5	1.781	0.106	400.3	1.776	0.101	400.0	1.771	0.096	399.8	1.767
0	0.114	404.2	1.794	0.109	404.0	1.790	0.103	403.7	1.785	0.099	403.5	1.780
5	0.117	407.9	1.808	0.111	407.7	1.803	0.106	407.4	1.798	0.101	407.2	1.794
10	0.119	411.6	1.821	0.113	411.4	1.816	0.108	411.2	1.812	0.103	411.0	1.807
15	0.122	415.3	1.834	0.116	415.1	1.829	0.110	414.9	1.825	0.105	414.7	1.820
20	0.124	419.0	1.847	0.118	418.9	1.842	0.112	418.7	1.838	0.107	418.5	1.833
25	0.127	422.8	1.860	0.120	422.6	1.855	0.115	422.5	1.850	0.109	422.3	1.846
30	0.129	426.6	1.872	0.123	426.4	1.868	0.117	426.3	1.863	0.112	426.1	1.859
35	0.131	430.4	1.885	0.125	430.2	1.880	0.119	430.1	1.876	0.114	429.9	1.871
40	0.134	434.2	1.897	0.127	434.1	1.892	0.121	433.9	1.888	0.116	433.8	1.884
45	0.136	438.1	1.909	0.129	437.9	1.905	0.123	437.8	1.900	0.118	437.7	1.896
50	0.138	442.0	1.921	0.132	441.8	1.917	0.126	441.7	1.912	0.120	441.6	1.908
55	0.141	445.9	1.933	0.134	445.8	1.929	0.128	445.6	1.925	0.122	445.5	1.920
60	0.143	449.8	1.945	0.136	449.7	1.941	0.130	449.6	1.936	0.124	449.5	1.932
65	0.145	453.8	1.957	0.138	453.7	1.953	0.132	453.6	1.948	0.126	453.4	1.944
70	0.148	457.8	1.969	0.141	457.7	1.964	0.134	457.6	1.960	0.128	457.5	1.956
75	0.150	461.8	1.981	0.143	461.7	1.976	0.136	461.6	1.972	0.130	461.5	1.968
80	0.152	465.9	1.992	0.145	465.8	1.988	0.138	465.7	1.983	0.132	465.6	1.979
85	0.155	470.0	2.004	0.147	469.9	1.999	0.140	469.8	1.995	0.134	469.7	1.991
90	0.157	474.1	2.015	0.149	474.0	2.011	0.142	473.9	2.006	0.136	473.8	2.002
95	0.159	478.2	2.026	0.152	478.1	2.022	0.145	478.0	2.018	0.138	477.9	2.014
100	0.162	482.4	2.038	0.154	482.3	2.033	0.147	482.2	2.029	0.140	482.1	2.025
110	0.166	490.8	2.060	0.158	490.7	2.055	0.151	490.7	2.051	0.144	490.6	2.047
115	0.168	495.1	2.071	0.160	495.0	2.067	0.153	494.9	2.062	0.146	494.8	2.058
120	0.171	499.4	2.082	0.163	499.3	2.078	0.155	499.2	2.073	0.148	499.1	2.069
125	0.173	503.7	2.093	0.165	503.6	2.088	0.157	503.5	2.084	0.150	503.5	2.080
130	0.175	508.1	2.104	0.167	508.0	2.099	0.159	507.9	2.095	0.152	507.8	2.091
135	0.178	512.4	2.115	0.169	512.4	2.110	0.161	512.3	2.106	0.154	512.2	2.102
140	0.180	516.8	2.125	0.171	516.8	2.121	0.163	516.7	2.117	0.156	516.6	2.113
145				0.173	521.2	2.132	0.165	521.1	2.127	0.158	521.1	2.123

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	240 kpa			250 kpa			260 kpa			270 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
-5	0.092	399.5	1.762									
0	0.094	403.3	1.776	0.090	403.0	1.772	0.086	402.8	1.768	0.083	402.6	1.764
5	0.096	407.0	1.790	0.092	406.8	1.785	0.088	406.6	1.781	0.085	406.3	1.777
10	0.098	410.8	1.803	0.094	410.6	1.799	0.090	410.3	1.795	0.087	410.1	1.791
15	0.101	414.5	1.816	0.096	414.3	1.812	0.092	414.1	1.808	0.089	413.9	1.804
20	0.103	418.3	1.829	0.098	418.1	1.825	0.094	417.9	1.821	0.091	417.7	1.817
25	0.105	422.1	1.842	0.100	421.9	1.838	0.096	421.8	1.834	0.092	421.6	1.830
30	0.107	425.9	1.855	0.102	425.8	1.851	0.098	425.6	1.847	0.094	425.4	1.843
35	0.109	429.8	1.867	0.104	429.6	1.863	0.100	429.4	1.859	0.096	429.3	1.856
40	0.111	433.6	1.880	0.106	433.5	1.876	0.102	433.3	1.872	0.098	433.2	1.868
45	0.113	437.5	1.892	0.108	437.4	1.888	0.104	437.2	1.884	0.100	437.1	1.881
50	0.115	441.4	1.904	0.110	441.3	1.900	0.106	441.2	1.897	0.102	441.0	1.893
55	0.117	445.4	1.916	0.112	445.2	1.912	0.107	445.1	1.909	0.103	445.0	1.905
60	0.119	449.3	1.928	0.114	449.2	1.924	0.109	449.1	1.921	0.105	448.9	1.917
65	0.121	453.3	1.940	0.116	453.2	1.936	0.111	453.1	1.933	0.107	453.0	1.929
70	0.123	457.3	1.952	0.118	457.2	1.948	0.113	457.1	1.944	0.109	457.0	1.941
75	0.125	461.4	1.964	0.119	461.3	1.960	0.115	461.2	1.956	0.110	461.0	1.953
80	0.127	465.5	1.975	0.121	465.3	1.971	0.117	465.2	1.968	0.112	465.1	1.964
85	0.128	469.6	1.987	0.123	469.5	1.983	0.118	469.3	1.979	0.114	469.2	1.976
90	0.130	473.7	1.998	0.125	473.6	1.994	0.120	473.5	1.991	0.116	473.4	1.987
95	0.132	477.8	2.010	0.127	477.7	2.006	0.122	477.6	2.002	0.117	477.5	1.999
100	0.134	482.0	2.021	0.129	481.9	2.017	0.124	481.8	2.013	0.119	481.7	2.010
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.138	490.5	2.043	0.132	490.4	2.039	0.127	490.3	2.036	0.122	490.2	2.032
115	0.140	494.8	2.054	0.134	494.7	2.051	0.129	494.6	2.047	0.124	494.5	2.043
120	0.142	499.1	2.065	0.136	499.0	2.062	0.131	498.9	2.058	0.126	498.8	2.054
125	0.144	503.4	2.076	0.138	503.3	2.073	0.133	503.2	2.069	0.128	503.1	2.065
130	0.146	507.7	2.087	0.140	507.7	2.083	0.134	507.6	2.080	0.129	507.5	2.076
135	0.148	512.1	2.098	0.142	512.0	2.094	0.136	512.0	2.091	0.131	511.9	2.087
140	0.150	516.5	2.109	0.143	516.5	2.105	0.138	516.4	2.101	0.133	516.3	2.098
145	0.151	521.0	2.119	0.145	520.9	2.116	0.140	520.8	2.112	0.134	520.8	2.109
150				0.147	525.4	2.126	0.141	525.3	2.123	0.136	525.2	2.119

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	280 kpa			290 kpa			300 kpa			310 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
0	0.080	402.3	1.760	0.077	402.1	1.756						
5	0.082	406.1	1.774	0.079	405.9	1.770	0.076	405.7	1.766	0.073	405.4	1.763
10	0.083	409.9	1.787	0.080	409.7	1.784	0.078	409.5	1.780	0.075	409.3	1.777
15	0.085	413.7	1.801	0.082	413.5	1.797	0.079	413.3	1.793	0.077	413.1	1.790
20	0.087	417.6	1.814	0.084	417.4	1.810	0.081	417.2	1.807	0.078	417.0	1.803
25	0.089	421.4	1.827	0.086	421.2	1.823	0.083	421.0	1.820	0.080	420.9	1.816
30	0.091	425.3	1.839	0.087	425.1	1.836	0.084	424.9	1.833	0.081	424.7	1.829
35	0.092	429.1	1.852	0.089	429.0	1.849	0.086	428.8	1.845	0.083	428.6	1.842
40	0.094	433.0	1.865	0.091	432.9	1.861	0.088	432.7	1.858	0.085	432.6	1.855
45	0.096	436.9	1.877	0.093	436.8	1.874	0.089	436.6	1.870	0.086	436.5	1.867
50	0.098	440.9	1.889	0.094	440.7	1.886	0.091	440.6	1.883	0.088	440.5	1.879
55	0.099	444.8	1.902	0.096	444.7	1.898	0.093	444.6	1.895	0.089	444.4	1.892
60	0.101	448.8	1.914	0.098	448.7	1.910	0.094	448.6	1.907	0.091	448.4	1.904
65	0.103	452.8	1.926	0.099	452.7	1.922	0.096	452.6	1.919	0.093	452.5	1.916
70	0.105	456.9	1.937	0.101	456.7	1.934	0.097	456.6	1.931	0.094	456.5	1.928
75	0.106	460.9	1.949	0.103	460.8	1.946	0.099	460.7	1.943	0.096	460.6	1.939
80	0.108	465.0	1.961	0.104	464.9	1.957	0.101	464.8	1.954	0.097	464.7	1.951
85	0.110	469.1	1.972	0.106	469.0	1.969	0.102	468.9	1.966	0.099	468.8	1.963
90	0.111	473.3	1.984	0.107	473.2	1.981	0.104	473.1	1.977	0.100	473.0	1.974
95	0.113	477.4	1.995	0.109	477.3	1.992	0.105	477.2	1.989	0.102	477.2	1.986
100	0.115	481.6	2.007	0.111	481.6	2.003	0.107	481.5	2.000	0.103	481.4	1.997
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.118	490.1	2.029	0.114	490.0	2.026	0.110	489.9	2.023	0.106	489.9	2.020
115	0.120	494.4	2.040	0.115	494.3	2.037	0.112	494.2	2.034	0.108	494.1	2.031
120	0.121	498.7	2.051	0.117	498.6	2.048	0.113	498.5	2.045	0.109	498.5	2.042
125	0.123	503.1	2.062	0.119	503.0	2.059	0.115	502.9	2.056	0.111	502.8	2.053
130	0.125	507.4	2.073	0.120	507.3	2.070	0.116	507.3	2.067	0.112	507.2	2.064
135	0.126	511.8	2.084	0.122	511.7	2.081	0.118	511.7	2.077	0.114	511.6	2.074
140	0.128	516.2	2.095	0.123	516.2	2.091	0.119	516.1	2.088	0.115	516.0	2.085
145	0.130	520.7	2.105	0.125	520.6	2.102	0.121	520.5	2.099	0.117	520.5	2.096
150	0.131	525.2	2.116	0.127	525.1	2.113	0.122	525.0	2.110	0.118	525.0	2.107
155							0.124	529.5	2.120	0.120	529.5	2.117

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	320 kpa			330 kpa			340 kpa			340 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
5	0.071	405.2	1.759	0.068	405.0	1.756	0.066	404.7	1.753	0.064	404.5	1.750
10	0.072	409.1	1.773	0.070	408.9	1.770	0.068	408.6	1.767	0.066	408.4	1.764
15	0.074	412.9	1.787	0.072	412.7	1.783	0.069	412.5	1.780	0.067	412.3	1.777
20	0.076	416.8	1.800	0.073	416.6	1.797	0.071	416.4	1.794	0.069	416.2	1.791
25	0.077	420.7	1.813	0.075	420.5	1.810	0.072	420.3	1.807	0.070	420.1	1.804
30	0.079	424.6	1.826	0.076	424.4	1.823	0.074	424.2	1.820	0.072	424.1	1.817
35	0.080	428.5	1.839	0.078	428.3	1.836	0.075	428.2	1.833	0.073	428.0	1.830
40	0.082	432.4	1.851	0.079	432.3	1.848	0.077	432.1	1.845	0.075	431.9	1.843
45	0.083	436.3	1.864	0.081	436.2	1.861	0.078	436.1	1.858	0.076	435.9	1.855
50	0.085	440.3	1.876	0.082	440.2	1.873	0.080	440.0	1.870	0.077	439.9	1.868
55	0.087	444.3	1.889	0.084	444.2	1.886	0.081	444.0	1.883	0.079	443.9	1.880
60	0.088	448.3	1.901	0.085	448.2	1.898	0.083	448.0	1.895	0.080	447.9	1.892
65	0.090	452.3	1.913	0.087	452.2	1.910	0.084	452.1	1.907	0.082	452.0	1.904
70	0.091	456.4	1.925	0.088	456.3	1.922	0.086	456.2	1.919	0.083	456.0	1.916
75	0.093	460.5	1.936	0.090	460.4	1.933	0.087	460.2	1.931	0.084	460.1	1.928
80	0.094	464.6	1.948	0.091	464.5	1.945	0.088	464.4	1.942	0.086	464.2	1.940
85	0.096	468.7	1.960	0.093	468.6	1.957	0.090	468.5	1.954	0.087	468.4	1.951
90	0.097	472.9	1.971	0.094	472.8	1.968	0.091	472.7	1.966	0.088	472.6	1.963
95	0.098	477.1	1.983	0.095	477.0	1.980	0.093	476.9	1.977	0.090	476.8	1.974
100	0.100	481.3	1.994	0.097	481.2	1.991	0.094	481.1	1.988	0.091	481.0	1.986
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.103	489.8	2.017	0.100	489.7	2.014	0.097	489.6	2.011	0.094	489.5	2.008
115	0.104	494.1	2.028	0.101	494.0	2.025	0.098	493.9	2.022	0.095	493.8	2.019
120	0.106	498.4	2.039	0.103	498.3	2.036	0.099	498.2	2.033	0.097	498.1	2.030
125	0.107	502.7	2.050	0.104	502.6	2.047	0.101	502.6	2.044	0.098	502.5	2.041
130	0.109	507.1	2.061	0.105	507.0	2.058	0.102	506.9	2.055	0.099	506.9	2.052
135	0.110	511.5	2.072	0.107	511.4	2.069	0.104	511.4	2.066	0.101	511.3	2.063
140	0.112	515.9	2.082	0.108	515.9	2.079	0.105	515.8	2.077	0.102	515.7	2.074
145	0.113	520.4	2.093	0.110	520.3	2.090	0.106	520.3	2.087	0.103	520.2	2.085
150	0.115	524.9	2.104	0.111	524.8	2.101	0.108	524.7	2.098	0.105	524.7	2.095
155	0.116	529.4	2.114	0.112	529.3	2.112	0.109	529.3	2.109	0.106	529.2	2.106

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	360 kpa			370 kpa			380 kpa			390 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
10	0.064	408.2	1.761	0.062	408.0	1.758	0.060	407.7	1.755	0.058	407.5	1.752
15	0.065	412.1	1.774	0.063	411.9	1.771	0.061	411.7	1.768	0.060	411.5	1.766
20	0.067	416.0	1.788	0.065	415.8	1.785	0.063	415.6	1.782	0.061	415.4	1.779
25	0.068	420.0	1.801	0.066	419.8	1.798	0.064	419.6	1.795	0.062	419.4	1.793
30	0.069	423.9	1.814	0.067	423.7	1.811	0.066	423.5	1.808	0.064	423.4	1.806
35	0.071	427.8	1.827	0.069	427.7	1.824	0.067	427.5	1.821	0.065	427.3	1.819
40	0.072	431.8	1.840	0.070	431.6	1.837	0.068	431.5	1.834	0.066	431.3	1.832
45	0.074	435.8	1.852	0.072	435.6	1.850	0.070	435.5	1.847	0.068	435.3	1.844
50	0.075	439.7	1.865	0.073	439.6	1.862	0.071	439.5	1.859	0.069	439.3	1.857
55	0.076	443.8	1.877	0.074	443.6	1.874	0.072	443.5	1.872	0.070	443.3	1.869
60	0.078	447.8	1.889	0.076	447.7	1.887	0.074	447.5	1.884	0.072	447.4	1.881
65	0.079	451.8	1.901	0.077	451.7	1.899	0.075	451.6	1.896	0.073	451.5	1.893
70	0.081	455.9	1.913	0.078	455.8	1.911	0.076	455.7	1.908	0.074	455.5	1.905
75	0.082	460.0	1.925	0.080	459.9	1.922	0.077	459.8	1.920	0.075	459.7	1.917
80	0.083	464.1	1.937	0.081	464.0	1.934	0.079	463.9	1.932	0.077	463.8	1.929
85	0.085	468.3	1.949	0.082	468.2	1.946	0.080	468.1	1.943	0.078	468.0	1.941
90	0.086	472.5	1.960	0.084	472.4	1.957	0.081	472.2	1.955	0.079	472.1	1.952
95	0.087	476.7	1.972	0.085	476.6	1.969	0.082	476.5	1.966	0.080	476.4	1.964
100	0.089	480.9	1.983	0.086	480.8	1.980	0.084	480.7	1.978	0.082	480.6	1.975
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.091	489.4	2.006	0.089	489.3	2.003	0.086	489.2	2.000	0.084	489.1	1.998
115	0.092	493.7	2.017	0.090	493.6	2.014	0.087	493.5	2.012	0.085	493.4	2.009
120	0.094	498.0	2.028	0.091	498.0	2.025	0.089	497.9	2.023	0.086	497.8	2.020
125	0.095	502.4	2.039	0.092	502.3	2.036	0.090	502.2	2.034	0.088	502.2	2.031
130	0.096	506.8	2.050	0.094	506.7	2.047	0.091	506.6	2.045	0.089	506.5	2.042
135	0.098	511.2	2.061	0.095	511.1	2.058	0.092	511.0	2.056	0.090	511.0	2.053
140	0.099	515.6	2.071	0.096	515.6	2.069	0.094	515.5	2.066	0.091	515.4	2.064
145	0.100	520.1	2.082	0.097	520.0	2.080	0.095	520.0	2.077	0.092	519.9	2.075
150	0.102	524.6	2.093	0.099	524.5	2.090	0.096	524.5	2.088	0.094	524.4	2.085
155	0.103	529.1	2.103	0.100	529.1	2.101	0.097	529.0	2.098	0.095	528.9	2.096
160	0.104	533.7	2.114	0.101	533.6	2.112	0.099	533.5	2.109	0.096	533.5	2.107

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	400 kpa			425 kpa			450 kpa			475 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
10	0.057	407.3	1.749									
15	0.058	411.3	1.763	0.054	410.7	1.756	0.051	410.2	1.750	0.048	409.6	1.743
20	0.059	415.2	1.776	0.056	414.7	1.770	0.052	414.2	1.763	0.049	413.7	1.757
25	0.061	419.2	1.790	0.057	418.7	1.783	0.053	418.3	1.777	0.050	417.8	1.771
30	0.062	423.2	1.803	0.058	422.7	1.797	0.055	422.3	1.791	0.051	421.8	1.785
35	0.063	427.2	1.816	0.059	426.7	1.810	0.056	426.3	1.804	0.053	425.9	1.798
40	0.065	431.1	1.829	0.061	430.7	1.823	0.057	430.3	1.817	0.054	429.9	1.811
45	0.066	435.2	1.842	0.062	434.8	1.835	0.058	434.4	1.829	0.055	434.0	1.824
50	0.067	439.2	1.854	0.063	438.8	1.848	0.059	438.4	1.842	0.056	438.1	1.837
55	0.068	443.2	1.867	0.064	442.9	1.860	0.060	442.5	1.855	0.057	442.2	1.849
60	0.070	447.3	1.879	0.065	446.9	1.873	0.062	446.6	1.867	0.058	446.3	1.861
65	0.071	451.3	1.891	0.067	451.0	1.885	0.063	450.7	1.879	0.059	450.4	1.874
70	0.072	455.4	1.903	0.068	455.1	1.897	0.064	454.8	1.891	0.060	454.5	1.886
75	0.073	459.5	1.915	0.069	459.3	1.909	0.065	459.0	1.903	0.061	458.7	1.898
80	0.075	463.7	1.927	0.070	463.4	1.921	0.066	463.1	1.915	0.062	462.8	1.910
85	0.076	467.9	1.938	0.071	467.6	1.933	0.067	467.3	1.927	0.063	467.0	1.922
90	0.077	472.0	1.950	0.072	471.8	1.944	0.068	471.5	1.939	0.064	471.3	1.933
95	0.078	476.3	1.962	0.073	476.0	1.956	0.069	475.7	1.950	0.065	475.5	1.945
100	0.079	480.5	1.973	0.075	480.2	1.967	0.070	480.0	1.962	0.066	479.8	1.956
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.082	489.0	1.996	0.077	488.8	1.990	0.072	488.6	1.984	0.068	488.4	1.979
115	0.083	493.4	2.007	0.078	493.1	2.001	0.073	492.9	1.996	0.069	492.7	1.990
120	0.084	497.7	2.018	0.079	497.5	2.012	0.075	497.3	2.007	0.070	497.1	2.002
125	0.085	502.1	2.029	0.080	501.9	2.023	0.076	501.7	2.018	0.071	501.5	2.013
130	0.087	506.5	2.040	0.081	506.3	2.034	0.077	506.1	2.029	0.072	505.9	2.024
135	0.088	510.9	2.051	0.082	510.7	2.045	0.078	510.5	2.040	0.073	510.3	2.035
140	0.089	515.3	2.062	0.083	515.2	2.056	0.079	515.0	2.051	0.074	514.8	2.046
145	0.090	519.8	2.072	0.085	519.6	2.067	0.080	519.4	2.061	0.075	519.3	2.056
150	0.091	524.3	2.083	0.086	524.1	2.077	0.081	524.0	2.072	0.076	523.8	2.067
155	0.092	528.8	2.094	0.087	528.7	2.088	0.082	528.5	2.083	0.077	528.3	2.078
160	0.093	533.4	2.104	0.088	533.2	2.099	0.083	533.1	2.093	0.078	532.9	2.088
165				0.089	537.8	2.109	0.084	537.7	2.104	0.079	537.5	2.099

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	500 kpa			525 kpa			550 kpa			575 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
20	0.046	413.2	1.752	0.044	412.7	1.746	0.042	412.1	1.740			
25	0.047	417.3	1.765	0.045	416.8	1.760	0.043	416.3	1.755	0.041	415.8	1.749
30	0.049	421.4	1.779	0.046	420.9	1.774	0.044	420.4	1.768	0.042	419.9	1.763
35	0.050	425.4	1.792	0.047	425.0	1.787	0.045	424.6	1.782	0.043	424.1	1.777
40	0.051	429.5	1.805	0.048	429.1	1.800	0.046	428.7	1.795	0.044	428.3	1.790
45	0.052	433.6	1.818	0.049	433.2	1.813	0.047	432.8	1.808	0.044	432.4	1.803
50	0.053	437.7	1.831	0.050	437.3	1.826	0.048	436.9	1.821	0.045	436.6	1.816
55	0.054	441.8	1.844	0.051	441.4	1.839	0.049	441.1	1.834	0.046	440.7	1.829
60	0.055	445.9	1.856	0.052	445.6	1.851	0.050	445.2	1.846	0.047	444.9	1.842
65	0.056	450.1	1.869	0.053	449.7	1.864	0.051	449.4	1.859	0.048	449.1	1.854
70	0.057	454.2	1.881	0.054	453.9	1.876	0.052	453.6	1.871	0.049	453.3	1.866
75	0.058	458.4	1.893	0.055	458.1	1.888	0.052	457.8	1.883	0.050	457.5	1.879
80	0.059	462.6	1.905	0.056	462.3	1.900	0.053	462.0	1.895	0.051	461.7	1.891
85	0.060	466.8	1.917	0.057	466.5	1.912	0.054	466.2	1.907	0.052	465.9	1.903
90	0.061	471.0	1.928	0.058	470.7	1.923	0.055	470.5	1.919	0.053	470.2	1.914
95	0.062	475.2	1.940	0.059	475.0	1.935	0.056	474.7	1.930	0.054	474.5	1.926
100	0.063	479.5	1.951	0.060	479.3	1.947	0.057	479.0	1.942	0.054	478.8	1.938
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.065	488.1	1.974	0.062	487.9	1.969	0.059	487.7	1.965	0.056	487.4	1.961
115	0.066	492.5	1.985	0.063	492.3	1.981	0.060	492.0	1.976	0.057	491.8	1.972
120	0.067	496.8	1.997	0.064	496.6	1.992	0.061	496.4	1.987	0.058	496.2	1.983
125	0.068	501.2	2.008	0.064	501.0	2.003	0.061	500.8	1.999	0.059	500.6	1.994
130	0.069	505.7	2.019	0.065	505.5	2.014	0.062	505.3	2.010	0.059	505.1	2.005
135	0.070	510.1	2.030	0.066	509.9	2.025	0.063	509.7	2.021	0.060	509.5	2.016
140	0.071	514.6	2.041	0.067	514.4	2.036	0.064	514.2	2.032	0.061	514.0	2.027
145	0.072	519.1	2.051	0.068	518.9	2.047	0.065	518.7	2.042	0.062	518.5	2.038
150	0.073	523.6	2.062	0.069	523.4	2.058	0.066	523.2	2.053	0.063	523.1	2.049
155	0.073	528.2	2.073	0.070	528.0	2.068	0.067	527.8	2.064	0.064	527.6	2.060
160	0.074	532.7	2.084	0.071	532.6	2.079	0.067	532.4	2.075	0.064	532.2	2.070
165	0.075	537.3	2.094	0.072	537.2	2.090	0.068	537.0	2.085	0.065	536.8	2.081
170	0.076	542.0	2.105	0.073	541.8	2.100	0.069	541.6	2.096	0.066	541.5	2.092
175										0.067	546.1	2.102

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	600 kpa			625 kpa			650 kpa			675 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
25	0.039	415.2	1.744	0.037	414.7	1.739	0.035	414.2	1.734			
30	0.040	419.5	1.758	0.038	419.0	1.753	0.036	418.5	1.749	0.035	418.0	1.744
35	0.041	423.7	1.772	0.039	423.2	1.767	0.037	422.7	1.763	0.035	422.3	1.758
40	0.042	427.8	1.785	0.040	427.4	1.781	0.038	427.0	1.776	0.036	426.5	1.772
45	0.042	432.0	1.799	0.041	431.6	1.794	0.039	431.2	1.790	0.037	430.8	1.785
50	0.043	436.2	1.812	0.041	435.8	1.807	0.040	435.4	1.803	0.038	435.0	1.799
55	0.044	440.4	1.825	0.042	440.0	1.820	0.041	439.6	1.816	0.039	439.2	1.812
60	0.045	444.5	1.837	0.043	444.2	1.833	0.041	443.8	1.829	0.040	443.5	1.824
65	0.046	448.7	1.850	0.044	448.4	1.845	0.042	448.1	1.841	0.041	447.7	1.837
70	0.047	452.9	1.862	0.045	452.6	1.858	0.043	452.3	1.854	0.041	452.0	1.850
75	0.048	457.2	1.874	0.046	456.9	1.870	0.044	456.6	1.866	0.042	456.2	1.862
80	0.049	461.4	1.886	0.047	461.1	1.882	0.045	460.8	1.878	0.043	460.5	1.874
85	0.049	465.7	1.898	0.047	465.4	1.894	0.045	465.1	1.890	0.044	464.8	1.886
90	0.050	469.9	1.910	0.048	469.7	1.906	0.046	469.4	1.902	0.044	469.1	1.898
95	0.051	474.2	1.922	0.049	474.0	1.918	0.047	473.7	1.914	0.045	473.4	1.910
100	0.052	478.5	1.933	0.050	478.3	1.929	0.048	478.0	1.925	0.046	477.8	1.922
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.054	487.2	1.956	0.051	487.0	1.952	0.049	486.7	1.948	0.047	486.5	1.945
115	0.054	491.6	1.968	0.052	491.4	1.964	0.050	491.1	1.960	0.048	490.9	1.956
120	0.055	496.0	1.979	0.053	495.8	1.975	0.051	495.5	1.971	0.049	495.3	1.967
125	0.056	500.4	1.990	0.054	500.2	1.986	0.052	500.0	1.982	0.050	499.8	1.979
130	0.057	504.9	2.001	0.055	504.6	1.997	0.052	504.4	1.994	0.050	504.2	1.990
135	0.058	509.3	2.012	0.055	509.1	2.008	0.053	508.9	2.005	0.051	508.7	2.001
140	0.059	513.8	2.023	0.056	513.6	2.019	0.054	513.4	2.016	0.052	513.2	2.012
145	0.059	518.3	2.034	0.057	518.2	2.030	0.055	518.0	2.026	0.052	517.8	2.023
150	0.060	522.9	2.045	0.058	522.7	2.041	0.055	522.5	2.037	0.053	522.3	2.034
155	0.061	527.5	2.056	0.058	527.3	2.052	0.056	527.1	2.048	0.054	526.9	2.044
160	0.062	532.0	2.066	0.059	531.9	2.062	0.057	531.7	2.059	0.055	531.5	2.055
165	0.062	536.7	2.077	0.060	536.5	2.073	0.058	536.3	2.069	0.055	536.2	2.066
170	0.063	541.3	2.087	0.061	541.1	2.084	0.058	541.0	2.080	0.056	540.8	2.076
175	0.064	546.0	2.098	0.061	545.8	2.094	0.059	545.7	2.090	0.057	545.5	2.087
180										0.057	550.2	2.097

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	700 kpa			725 kpa			750 kpa			800 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
30	0.033	417.5	1.740	0.032	416.9	1.735	0.031	416.4	1.731			
35	0.034	421.8	1.754	0.033	421.3	1.750	0.031	420.8	1.745	0.029	419.8	1.737
40	0.035	426.1	1.768	0.034	425.6	1.763	0.032	425.2	1.759	0.030	424.2	1.751
45	0.036	430.4	1.781	0.034	429.9	1.777	0.033	429.5	1.773	0.031	428.6	1.765
50	0.037	434.6	1.795	0.035	434.2	1.791	0.034	433.8	1.787	0.031	433.0	1.779
55	0.037	438.9	1.808	0.036	438.5	1.804	0.035	438.1	1.800	0.032	437.3	1.792
60	0.038	443.1	1.820	0.037	442.8	1.817	0.035	442.4	1.813	0.033	441.7	1.805
65	0.039	447.4	1.833	0.037	447.0	1.829	0.036	446.7	1.826	0.034	446.0	1.818
70	0.040	451.7	1.846	0.038	451.3	1.842	0.037	451.0	1.838	0.034	450.3	1.831
75	0.040	455.9	1.858	0.039	455.6	1.854	0.038	455.3	1.851	0.035	454.7	1.844
80	0.041	460.2	1.870	0.040	459.9	1.867	0.038	459.6	1.863	0.036	459.0	1.856
85	0.042	464.5	1.882	0.040	464.2	1.879	0.039	463.9	1.875	0.036	463.4	1.868
90	0.043	468.8	1.894	0.041	468.6	1.891	0.040	468.3	1.887	0.037	467.7	1.880
95	0.043	473.2	1.906	0.042	472.9	1.903	0.040	472.6	1.899	0.038	472.1	1.892
100	0.044	477.5	1.918	0.043	477.3	1.914	0.041	477.0	1.911	0.038	476.5	1.904
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.046	486.3	1.941	0.044	486.0	1.938	0.042	485.8	1.934	0.040	485.3	1.928
115	0.046	490.7	1.953	0.045	490.5	1.949	0.043	490.2	1.946	0.040	489.8	1.939
120	0.047	495.1	1.964	0.045	494.9	1.960	0.044	494.7	1.957	0.041	494.2	1.950
125	0.048	499.6	1.975	0.046	499.3	1.972	0.044	499.1	1.968	0.041	498.7	1.962
130	0.048	504.0	1.986	0.047	503.8	1.983	0.045	503.6	1.979	0.042	503.2	1.973
135	0.049	508.5	1.997	0.047	508.3	1.994	0.046	508.1	1.991	0.043	507.7	1.984
140	0.050	513.0	2.008	0.048	512.9	2.005	0.046	512.7	2.002	0.043	512.3	1.995
145	0.051	517.6	2.019	0.049	517.4	2.016	0.047	517.2	2.013	0.044	516.8	2.006
150	0.051	522.2	2.030	0.049	522.0	2.027	0.048	521.8	2.023	0.045	521.4	2.017
155	0.052	526.7	2.041	0.050	526.6	2.038	0.048	526.4	2.034	0.045	526.0	2.028
160	0.053	531.4	2.052	0.051	531.2	2.048	0.049	531.0	2.045	0.046	530.7	2.039
165	0.053	536.0	2.062	0.051	535.8	2.059	0.050	535.7	2.056	0.046	535.3	2.049
170	0.054	540.7	2.073	0.052	540.5	2.069	0.050	540.3	2.066	0.047	540.0	2.060
175	0.055	545.3	2.083	0.053	545.2	2.080	0.051	545.0	2.077	0.048	544.7	2.071
180	0.055	550.1	2.094	0.053	549.9	2.090	0.052	549.7	2.087	0.048	549.4	2.081
185										0.049	554.2	2.091

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	850 kpa			900 kpa			900 kpa			1000 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
35	0.027	418.8	1.729									
40	0.028	423.3	1.744	0.026	422.3	1.736	0.024	421.3	1.729	0.023	420.2	1.722
45	0.029	427.7	1.758	0.027	426.8	1.751	0.025	425.9	1.744	0.023	424.9	1.737
50	0.029	432.1	1.772	0.027	431.3	1.765	0.026	430.4	1.758	0.024	429.5	1.751
55	0.030	436.5	1.785	0.028	435.7	1.778	0.026	434.9	1.772	0.025	434.1	1.765
60	0.031	440.9	1.798	0.029	440.2	1.792	0.027	439.4	1.785	0.025	438.6	1.779
65	0.031	445.3	1.811	0.029	444.6	1.805	0.028	443.9	1.799	0.026	443.1	1.792
70	0.032	449.7	1.824	0.030	449.0	1.818	0.028	448.3	1.812	0.027	447.6	1.806
75	0.033	454.0	1.837	0.031	453.4	1.831	0.029	452.7	1.824	0.027	452.1	1.818
80	0.033	458.4	1.849	0.031	457.8	1.843	0.029	457.2	1.837	0.028	456.5	1.831
85	0.034	462.8	1.862	0.032	462.2	1.855	0.030	461.6	1.849	0.028	461.0	1.844
90	0.035	467.2	1.874	0.033	466.6	1.868	0.031	466.0	1.862	0.029	465.5	1.856
95	0.035	471.6	1.886	0.033	471.0	1.880	0.031	470.5	1.874	0.029	469.9	1.868
100	0.036	476.0	1.898	0.034	475.5	1.892	0.032	474.9	1.886	0.030	474.4	1.880
105	-	-	-	-	-	-	-	-	-	-	-	-
110	0.037	484.8	1.921	0.035	484.4	1.915	0.033	483.9	1.910	0.031	483.4	1.904
115	0.038	489.3	1.933	0.035	488.8	1.927	0.033	488.4	1.921	0.032	487.9	1.916
120	0.038	493.8	1.944	0.036	493.3	1.938	0.034	492.9	1.933	0.032	492.4	1.927
125	0.039	498.3	1.956	0.037	497.8	1.950	0.035	497.4	1.944	0.033	497.0	1.939
130	0.039	502.8	1.967	0.037	502.4	1.961	0.035	501.9	1.956	0.033	501.5	1.950
135	0.040	507.3	1.978	0.038	506.9	1.972	0.036	506.5	1.967	0.034	506.1	1.962
140	0.041	511.9	1.989	0.038	511.5	1.983	0.036	511.1	1.978	0.034	510.7	1.973
145	0.041	516.5	2.000	0.039	516.1	1.994	0.037	515.7	1.989	0.035	515.3	1.984
150	0.042	521.1	2.011	0.039	520.7	2.005	0.037	520.3	2.000	0.035	519.9	1.995
155	0.042	525.7	2.022	0.040	525.3	2.016	0.038	525.0	2.011	0.036	524.6	2.006
160	0.043	530.3	2.033	0.041	530.0	2.027	0.038	529.6	2.022	0.036	529.3	2.017
165	0.044	535.0	2.043	0.041	534.6	2.038	0.039	534.3	2.033	0.037	534.0	2.027
170	0.044	539.7	2.054	0.042	539.3	2.049	0.039	539.0	2.043	0.037	538.7	2.038
175	0.045	544.4	2.065	0.042	544.1	2.059	0.040	543.7	2.054	0.038	543.4	2.049
180	0.045	549.1	2.075	0.043	548.8	2.070	0.040	548.5	2.064	0.038	548.2	2.059
185	0.046	553.9	2.086	0.043	553.6	2.080	0.041	553.3	2.075	0.039	553.0	2.070
190				0.044	558.4	2.091	0.041	558.1	2.085	0.039	557.8	2.080

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	1100 kpa			1200 kpa			1300 kpa			1400 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
45	0.021	422.9	1.724									
50	0.021	427.7	1.738	0.019	425.7	1.726	0.017	423.6	1.714			
55	0.022	432.4	1.753	0.020	430.6	1.741	0.018	428.7	1.729	0.016	426.7	1.718
60	0.023	437.0	1.767	0.020	435.3	1.755	0.018	433.6	1.744	0.017	431.7	1.734
65	0.023	441.6	1.781	0.021	440.0	1.769	0.019	438.4	1.759	0.017	436.7	1.748
70	0.024	446.2	1.794	0.022	444.7	1.783	0.020	443.1	1.773	0.018	441.6	1.763
75	0.024	450.7	1.807	0.022	449.3	1.796	0.020	447.9	1.786	0.018	446.4	1.777
80	0.025	455.2	1.820	0.023	453.9	1.810	0.021	452.6	1.800	0.019	451.2	1.790
85	0.025	459.8	1.833	0.023	458.5	1.823	0.021	457.2	1.813	0.019	455.9	1.803
90	0.026	464.3	1.845	0.024	463.1	1.835	0.021	461.9	1.826	0.020	460.6	1.817
95	0.027	468.8	1.858	0.024	467.7	1.848	0.022	466.5	1.838	0.020	465.3	1.829
100	0.027	473.3	1.870	0.025	472.2	1.860	0.022	471.1	1.851	0.021	470.0	1.842
105	-	-	-	-	-	-	-	-	-	0.021	474.7	1.854
110	0.028	482.4	1.894	0.025	481.4	1.884	0.023	480.4	1.875	0.021	479.3	1.867
115	0.029	486.9	1.906	0.026	486.0	1.896	0.024	485.0	1.887	0.022	484.0	1.879
120	0.029	491.5	1.917	0.026	490.6	1.908	0.024	489.6	1.899	0.022	488.7	1.891
125	0.029	496.1	1.929	0.027	495.2	1.920	0.025	494.3	1.911	0.023	493.4	1.903
130	0.030	500.7	1.940	0.027	499.8	1.931	0.025	498.9	1.922	0.023	498.0	1.914
135	0.030	505.3	1.952	0.028	504.4	1.943	0.025	503.6	1.934	0.023	502.7	1.926
140	0.031	509.9	1.963	0.028	509.1	1.954	0.026	508.3	1.945	0.024	507.4	1.937
145	0.031	514.5	1.974	0.029	513.7	1.965	0.026	513.0	1.957	0.024	512.2	1.949
150	0.032	519.2	1.985	0.029	518.4	1.976	0.027	517.7	1.968	0.025	516.9	1.960
155	0.032	523.9	1.996	0.029	523.1	1.987	0.027	522.4	1.979	0.025	521.6	1.971
160	0.033	528.6	2.007	0.030	527.8	1.998	0.027	527.1	1.990	0.025	526.4	1.982
165	0.033	533.3	2.018	0.030	532.6	2.009	0.028	531.9	2.001	0.026	531.2	1.993
170	0.034	538.0	2.029	0.031	537.3	2.020	0.028	536.7	2.012	0.026	536.0	2.004
175	0.034	542.8	2.039	0.031	542.1	2.031	0.029	541.5	2.022	0.026	540.8	2.015
180	0.035	547.6	2.050	0.032	546.9	2.041	0.029	546.3	2.033	0.027	545.6	2.026
185	0.035	552.4	2.060	0.032	551.7	2.052	0.029	551.1	2.044	0.027	550.5	2.036
190	0.036	557.2	2.071	0.032	556.6	2.062	0.030	556.0	2.054	0.028	555.4	2.047
195	0.036	562.0	2.081	0.033	561.4	2.073	0.030	560.9	2.065	0.028	560.3	2.057
200				0.033	566.3	2.083	0.031	565.7	2.075	0.028	565.2	2.068
205										0.029	570.1	2.078

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	1500 kpa			1600 kpa			1700 kpa			1800 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
60	0.015	429.8	1.723	0.014	427.7	1.712	0.013	431.1	1.718	0.012	429.0	1.708
65	0.016	434.9	1.738	0.015	433.0	1.728	0.014	436.4	1.734	0.013	434.5	1.724
70	0.016	439.9	1.753	0.015	438.2	1.743	0.014	441.6	1.749	0.013	439.9	1.740
75	0.017	444.8	1.767	0.015	443.3	1.758	0.015	446.7	1.763	0.014	445.1	1.755
80	0.017	449.7	1.781	0.016	448.2	1.772	0.015	451.7	1.777	0.014	450.2	1.769
85	0.018	454.5	1.795	0.016	453.1	1.786	0.016	456.7	1.791	0.015	455.3	1.783
90	0.018	459.3	1.808	0.017	458.0	1.799	0.016	461.6	1.805	0.015	460.3	1.797
95	0.019	464.1	1.821	0.017	462.8	1.813	0.016	466.4	1.818	0.015	465.2	1.810
100	0.019	468.8	1.834	0.018	467.6	1.826	0.017	471.3	1.831	0.016	470.1	1.823
105	0.019	473.6	1.846	0.018	472.4	1.838	0.017	476.1	1.843	0.016	475.0	1.836
110	0.020	478.3	1.859	0.018	477.2	1.851	0.017	480.9	1.856	0.016	479.9	1.849
115	0.020	483.0	1.871	0.019	482.0	1.863	0.018	485.7	1.868	0.017	484.7	1.861
120	0.021	487.7	1.883	0.019	486.7	1.875	0.018	490.5	1.880	0.017	489.5	1.873
125	0.021	492.4	1.895	0.019	491.5	1.887	0.019	495.3	1.892	0.017	494.4	1.885
130	0.021	497.1	1.907	0.020	496.2	1.899	0.019	500.1	1.904	0.018	499.2	1.897
135	0.022	501.9	1.918	0.020	501.0	1.911	0.019	504.9	1.916	0.018	504.1	1.909
140	0.022	506.6	1.930	0.021	505.8	1.923	0.020	509.7	1.927	0.018	508.9	1.921
145	0.022	511.4	1.941	0.021	510.5	1.934	0.020	514.5	1.939	0.019	513.7	1.932
150	0.023	516.1	1.953	0.021	515.3	1.945	0.020	519.4	1.950	0.019	518.6	1.944
155	0.023	520.9	1.964	0.022	520.1	1.957	0.021	524.2	1.961	0.019	523.5	1.955
160	0.024	525.7	1.975	0.022	524.9	1.968	0.021	529.1	1.972	0.020	528.3	1.966
165	0.024	530.5	1.986	0.022	529.8	1.979	0.021	533.9	1.984	0.020	533.2	1.977
170	0.024	535.3	1.997	0.023	534.6	1.990	0.021	538.8	1.994	0.020	538.1	1.988
175	0.025	540.1	2.008	0.023	539.5	2.001	0.022	543.7	2.005	0.020	543.0	1.999
180	0.025	545.0	2.018	0.023	544.3	2.012	0.022	548.6	2.016	0.021	548.0	2.010
185	0.025	549.9	2.029	0.024	549.2	2.022	0.022	553.5	2.027	0.021	552.9	2.021
190	0.026	554.8	2.040	0.024	554.1	2.033	0.023	558.5	2.037	0.021	557.9	2.031
195	0.026	559.7	2.050	0.024	559.1	2.044	0.023	563.4	2.048	0.022	562.8	2.042
200	0.026	564.6	2.061	0.025	564.0	2.054	0.023	568.4	2.058	0.022	567.8	2.052
205	0.027	569.5	2.071	0.025	569.0	2.065	0.024	573.4	2.069	0.022	572.9	2.063
210	0.027	574.5	2.082	0.025	574	2.075	0.024	578.4	2.079	0.023	577.9	2.073

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	1900 kpa			2000 kpa			2200 kpa			2200 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
70	0.012	432.5	1.715	0.011	430.4	1.706						
75	0.012	438.1	1.731	0.011	436.2	1.722	0.010	432.0	1.704			
80	0.013	443.4	1.746	0.012	441.7	1.738	0.010	438.0	1.721	0.009	433.9	1.704
85	0.013	448.7	1.761	0.012	447.1	1.753	0.011	443.7	1.737	0.009	440.0	1.721
90	0.014	453.8	1.775	0.013	452.4	1.768	0.011	449.3	1.753	0.010	445.9	1.738
95	0.014	458.9	1.789	0.013	457.5	1.782	0.011	454.7	1.767	0.010	451.6	1.753
100	0.014	463.9	1.803	0.013	462.6	1.796	0.012	460.0	1.782	0.011	457.1	1.768
105	0.015	468.9	1.816	0.014	467.7	1.809	0.012	465.2	1.796	0.011	462.5	1.783
110	0.015	473.9	1.829	0.014	472.7	1.822	0.013	470.3	1.809	0.011	467.8	1.797
115	0.015	478.8	1.842	0.014	477.7	1.835	0.013	475.4	1.822	0.011	473.1	1.810
120	0.016	483.7	1.854	0.015	482.6	1.848	0.013	480.5	1.835	0.012	478.3	1.823
125	0.016	488.6	1.867	0.015	487.6	1.860	0.013	485.5	1.848	0.012	483.4	1.836
130	0.016	493.4	1.879	0.015	492.5	1.873	0.014	490.5	1.861	0.012	488.5	1.849
135	0.017	498.3	1.891	0.016	497.4	1.885	0.014	495.5	1.873	0.013	493.6	1.862
140	0.017	503.2	1.903	0.016	502.3	1.897	0.014	500.5	1.885	0.013	498.7	1.874
145	0.017	508.1	1.915	0.016	507.2	1.909	0.015	505.5	1.897	0.013	503.7	1.886
150	0.018	512.9	1.926	0.017	512.1	1.920	0.015	510.5	1.909	0.013	508.8	1.898
155	0.018	517.8	1.938	0.017	517.0	1.932	0.015	515.4	1.921	0.014	513.8	1.910
160	0.018	522.7	1.949	0.017	521.9	1.943	0.015	520.4	1.932	0.014	518.9	1.922
165	0.018	527.6	1.960	0.017	526.9	1.954	0.016	525.4	1.944	0.014	523.9	1.933
170	0.019	532.5	1.971	0.018	531.8	1.966	0.016	530.4	1.955	0.014	528.9	1.945
175	0.019	537.4	1.982	0.018	536.8	1.977	0.016	535.4	1.966	0.015	534.0	1.956
180	0.019	542.4	1.993	0.018	541.7	1.988	0.016	540.4	1.977	0.015	539.0	1.967
185	0.020	547.3	2.004	0.019	546.7	1.999	0.017	545.4	1.988	0.015	544.1	1.978
190	0.020	552.3	2.015	0.019	551.7	2.009	0.017	550.4	1.999	0.015	549.1	1.989
195	0.020	557.3	2.026	0.019	556.7	2.020	0.017	555.4	2.010	0.016	554.2	2.000
200	0.020	562.3	2.036	0.019	561.7	2.031	0.017	560.5	2.021	0.016	559.3	2.011
205	0.021	567.3	2.047	0.020	566.7	2.041	0.018	565.5	2.031	0.016	564.4	2.022
210	0.021	572.3	2.057	0.020	571.7	2.052	0.018	570.6	2.042	0.016	569.5	2.032
215	0.021	577.3	2.068	0.020	576.8	2.062	0.018	575.7	2.052	0.017	574.6	2.043
220	0.022	582.4	2.078	0.020	581.9	2.073	0.018	580.8	2.063	0.017	579.7	2.053
225							0.019	585.9	2.073	0.017	584.9	2.064
230										0.017	590.0	2.074

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	2600 kpa			2800 kpa			3000 kpa			3200 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
80	0.008	429.1	1.686									
85	0.008	435.9	1.705	0.007	431.2	1.688						
90	0.009	442.3	1.723	0.008	438.2	1.707	0.007	433.6	1.690	0.006	428.1	1.672
95	0.009	448.3	1.739	0.008	444.7	1.725	0.007	440.7	1.710	0.006	436.2	1.694
100	0.009	454.1	1.755	0.008	450.8	1.741	0.008	447.3	1.728	0.007	443.4	1.713
105	0.010	459.7	1.770	0.009	456.7	1.757	0.008	453.6	1.744	0.007	450.1	1.731
110	0.010	465.2	1.784	0.009	462.5	1.772	0.008	459.6	1.760	0.007	456.5	1.748
115	0.010	470.6	1.798	0.009	468.1	1.787	0.009	465.4	1.775	0.008	462.6	1.764
120	0.011	476.0	1.812	0.010	473.6	1.801	0.009	471.1	1.790	0.008	468.5	1.779
125	0.011	481.2	1.825	0.010	479.0	1.814	0.009	476.6	1.804	0.008	474.2	1.793
130	0.011	486.5	1.838	0.010	484.3	1.828	0.009	482.1	1.817	0.009	479.8	1.807
135	0.011	491.7	1.851	0.010	489.6	1.841	0.010	487.5	1.831	0.009	485.4	1.821
140	0.012	496.8	1.864	0.011	494.9	1.853	0.010	492.9	1.844	0.009	490.9	1.834
145	0.012	501.9	1.876	0.011	500.1	1.866	0.010	498.2	1.857	0.009	496.3	1.847
150	0.012	507.1	1.888	0.011	505.3	1.878	0.010	503.5	1.869	0.009	501.7	1.860
155	0.012	512.2	1.900	0.011	510.5	1.891	0.011	508.8	1.881	0.010	507.0	1.873
160	0.013	517.3	1.912	0.012	515.6	1.903	0.011	514.0	1.894	0.010	512.3	1.885
165	0.013	522.4	1.924	0.012	520.8	1.914	0.011	519.2	1.906	0.010	517.6	1.897
170	0.013	527.4	1.935	0.012	525.9	1.926	0.011	524.4	1.917	0.010	522.9	1.909
175	0.013	532.5	1.947	0.012	531.1	1.938	0.011	529.6	1.929	0.011	528.1	1.921
180	0.014	537.6	1.958	0.013	536.2	1.949	0.012	534.8	1.941	0.011	533.4	1.933
185	0.014	542.7	1.969	0.013	541.4	1.960	0.012	540.0	1.952	0.011	538.6	1.944
190	0.014	547.8	1.980	0.013	546.5	1.971	0.012	545.2	1.963	0.011	543.9	1.955
195	0.014	552.9	1.991	0.013	551.7	1.983	0.012	550.4	1.974	0.011	549.1	1.967
200	0.015	558.1	2.002	0.013	556.8	1.994	0.012	555.6	1.985	0.012	554.3	1.978
205	0.015	563.2	2.013	0.014	562.0	2.004	0.013	560.8	1.996	0.012	559.6	1.989
210	0.015	568.3	2.023	0.014	567.2	2.015	0.013	566.0	2.007	0.012	564.8	2.000
215	0.015	573.5	2.034	0.014	572.4	2.026	0.013	571.2	2.018	0.012	570.1	2.011
220	0.015	578.6	2.045	0.014	577.5	2.036	0.013	576.5	2.029	0.012	575.3	2.021
225	0.016	583.8	2.055	0.014	582.8	2.047	0.013	581.7	2.039	0.012	580.6	2.032
230	0.016	589.0	2.065	0.015	588.0	2.057	0.014	586.9	2.050	0.013	585.9	2.042
235				0.015	593.2	2.068	0.014	592.2	2.060	0.013	591.2	2.053
240							0.014	597.5	2.070	0.013	596.5	2.063

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

R-401A Superheated Vapour - Constant Pressure Tables

Temp. (°C)	3400 kpa			3600 kpa			3600 kpa		
	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)	Volume (m3/kg)	Enthalpy (kj/kg)	Entropy (kj/K-kg)
95	0.006	431.0	1.676						
100	0.006	439.1	1.698	0.005	434.1	1.682	0.005	428.1	1.663
105	-	-	-	-	-	-	-	-	-
110	0.007	453.2	1.735	0.006	449.6	1.723	0.006	445.6	1.709
115	0.007	459.6	1.752	0.006	456.4	1.740	0.006	452.9	1.728
120	0.007	465.7	1.768	0.007	462.8	1.757	0.006	459.7	1.746
125	0.008	471.7	1.783	0.007	469.0	1.772	0.006	466.2	1.762
130	0.008	477.5	1.797	0.007	475.0	1.787	0.007	472.4	1.778
135	0.008	483.2	1.811	0.008	480.9	1.802	0.007	478.5	1.792
140	0.008	488.8	1.825	0.008	486.6	1.816	0.007	484.4	1.807
145	0.009	494.3	1.838	0.008	492.3	1.829	0.007	490.2	1.821
150	0.009	499.8	1.851	0.008	497.9	1.843	0.008	495.9	1.834
155	0.009	505.2	1.864	0.008	503.4	1.856	0.008	501.5	1.848
160	0.009	510.6	1.877	0.009	508.9	1.868	0.008	507.1	1.861
165	0.009	516.0	1.889	0.009	514.3	1.881	0.008	512.6	1.873
170	0.010	521.3	1.901	0.009	519.7	1.893	0.008	518.1	1.886
175	0.010	526.6	1.913	0.009	525.1	1.905	0.009	523.6	1.898
180	0.010	531.9	1.925	0.009	530.5	1.917	0.009	529.0	1.910
185	0.010	537.2	1.936	0.010	535.8	1.929	0.009	534.4	1.922
190	0.010	542.5	1.948	0.010	541.2	1.941	0.009	539.8	1.934
195	0.011	547.8	1.959	0.010	546.5	1.952	0.009	545.2	1.945
200	0.011	553.1	1.970	0.010	551.8	1.963	0.009	550.5	1.956
205	0.011	558.4	1.982	0.010	557.1	1.975	0.010	555.9	1.968
210	0.011	563.7	1.992	0.010	562.5	1.986	0.010	561.3	1.979
215	0.011	568.9	2.003	0.011	567.8	1.997	0.010	566.6	1.990
220	0.011	574.2	2.014	0.011	573.1	2.007	0.010	572.0	2.001
225	0.012	579.5	2.025	0.011	578.4	2.018	0.010	577.4	2.012
230	0.012	584.8	2.035	0.011	583.8	2.029	0.010	582.7	2.022
235	0.012	590.2	2.046	0.011	589.1	2.039	0.011	588.1	2.033
240	0.012	595.5	2.056	0.011	594.5	2.050	0.011	593.5	2.044

NIST and NIST Standard Reference Database 23 - NIST Reference Fluid Thermodynamic and Transport Properties Database

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