

Dati fondamentali - (T=300K, p=1 bar)						
	massa molecolare [kg/kmol]	R ₁ [J/kgK]	c _v [J/kgK]	c _p [J/kgK]	Press. crit. [bar]	Temp. crit. [K]
Azoto	28.01	296.8	743	1039	33.9	126
Idrogeno	2.018	4124	10183	14307	12.9	33.2
CO	28.01	296.8	744	1040	35	133
Ossigeno	32.00	259.8	658	918	50.5	154
Aria	28.97	287	718	1005	37.7	133
CO ₂	44.01	188.9	657	846	73.9	304
Vap. H ₂ O (p=p _{sat})	18.02	461.8	1440	1900	220.9	647

Energia interna gas perfetti u [kJ/kg]						
T[K]	Azoto	Idrogeno	CO	Ossigeno	Aria	CO ₂
260	193.0	2611.8	193.0	169.3	185.5	131.5
300	222.7	3012.5	222.7	195.5	214.5	156.9
400	296.9	4052.0	298.4	262.3	287.0	227.9
500	371.9	5101.5	373.5	332.0	361.0	307.1
600	446.8	6150.5	449.9	405.3	436.3	392.9
700	526.4	7200.0	530.9	480.2	513.1	484.3
800	608.9	8271.5	614.8	558.8	592.8	580.6
900	692.8	9343.5	698.6	638.8	675.3	680.7
1000	780.4	10433.0	787.2	721.4	759.4	783.5
1200	958.1	12659.0	968.5	890.7	936.1	997.9
1400	1142.5	14967.5	1157.3	1063.8	1115.8	1219.9
1600	1332.8	17361.0	1349.2	1240.7	1298.0	1447.7
1800	1526.2	19857.0	1544.1	1421.7	1489.4	1679.2
2000	1722.4	22418.5	1743.3	1604.0	1679.2	1914.1
2200	1920.3	25039.5	1945.7	1788.7	1873.3	2152.5
2400	2121.1	27725.5	2147.9	1977.7	2068.7	2392.0
2600	2323.3	30474.0	2350.3	2169.0	2265.9	2634.8
2800	2527.1	33287.5	2552.5	2363.0	2496.0	2877.7
3000	2732.4	36139.0	2761.0	2558.1	2668.6	3122.9

Entalpia gas perfetti h [kJ/kg]						
T[K]	Azoto	Idrogeno	CO	Ossigeno	Aria	CO ₂
260	270.2	3684.0	270.2	236.9	260.1	180.6
300	311.8	4259.6	311.8	273.4	300.6	213.6
400	415.7	5714.8	417.1	366.2	401.8	303.5
500	520.4	7180.0	522.0	461.9	504.5	401.6
600	625.0	8644.7	628.0	561.2	608.5	506.2
700	734.3	10109.9	738.7	662.0	714.0	616.6
800	846.4	11597.1	852.3	766.7	822.4	731.8
900	960.0	13084.4	965.9	872.6	933.5	850.8
1000	1077.3	14590.0	1084.1	981.3	1046.4	972.5
1200	1314.5	17647.4	1324.8	1202.5	1280.5	1224.7
1400	1558.2	20787.3	1573.0	1427.5	1517.6	1484.4
1600	1807.8	24012.2	1824.3	1656.4	1757.1	1750.0
1800	2060.7	27339.6	2078.5	1889.4	2006.0	2019.3
2000	2316.3	30732.5	2337.1	2123.6	2253.2	2292.0
2200	2573.6	34184.9	2598.9	2360.3	2504.7	2568.2
2400	2833.7	37702.3	2860.5	2601.2	2757.5	2845.4
2600	3095.3	41282.2	3122.3	2844.5	3012.1	3126.1
2800	3358.5	44927.1	3383.9	3090.4	3299.6	3406.8
3000	3623.2	48610.0	3651.8	3337.5	3529.5	3689.8

p bar	t °C	Volume specifico m³/kg		Entalpia kJ/kg			Energia interna kJ/kg		p bar
		v _l	v _v	h _l	r	h _v	u _l	u _v	
0.006 02	0	0.001 000 2	206.298 7	-0.0	2501.6	2501.6	-0.0	2375.6	0.006 02
0.006 11	0.01	0.001 000 2	206.162 9	+0.0	2501.6	2501.6	0	2375.6	0.006 11
0.010	6.98	0.001 000 1	129.210 7	29.3	2485.0	2514.4	29.3	2385.2	0.010
0.020	17.51	0.001 001 2	67.011 6	73.5	2460.2	2533.6	73.5	2399.6	0.020
0.030	24.10	0.001 002 7	45.670 0	101.0	2444.6	2545.6	101.0	2408.6	0.030
0.040	28.98	0.001 004 0	34.803 3	121.4	2433.1	2554.5	121.4	2415.3	0.040
0.050	32.90	0.001 005 2	28.194 5	137.8	2423.8	2561.6	137.8	2420.6	0.050
0.060	36.18	0.001 006 4	23.740 6	151.5	2416.0	2567.5	151.5	2425.1	0.060
0.070	39.03	0.001 007 4	20.530 4	163.4	2409.2	2572.6	163.4	2428.9	0.070
0.080	41.54	0.001 008 4	18.103 8	173.9	2403.2	2577.1	173.9	2432.3	0.080
0.090	43.79	0.001 009 4	16.203 4	183.3	2397.9	2581.1	183.3	2435.3	0.090
0.10	45.83	0.001 010 2	14.673 7	191.8	2392.9	2584.8	191.8	2438.1	0.10
0.15	54.00	0.001 014 0	10.022 1	226.0	2373.2	2599.2	226.0	2448.9	0.15
0.20	60.09	0.001 017 2	7.649 2	251.5	2358.4	2609.9	251.5	2456.9	0.20
0.25	64.99	0.001 019 9	6.204 0	272.0	2346.4	2618.3	272.0	2463.2	0.25
0.30	69.13	0.001 022 3	5.229 0	289.3	2336.1	2625.4	289.6	2468.2	0.30
0.35	72.71	0.001 024 5	4.525 5	304.3	2327.2	2631.5	304.3	2473.1	0.35
0.40	75.89	0.001 026 5	3.993 2	317.7	2319.2	2636.9	317.7	2477.2	0.40
0.45	78.74	0.001 028 4	3.576 1	329.6	2312.0	2641.7	329.6	2480.8	0.45
0.50	81.35	0.001 030 1	3.240 1	340.6	2305.4	2646.0	340.5	2484.0	0.50
0.60	85.95	0.001 033 3	2.731 7	359.9	2293.6	2653.6	359.8	2489.7	0.60
0.70	89.96	0.001 036 1	2.364 7	376.8	2283.3	2660.1	376.3	2494.6	0.70
0.80	93.51	0.001 038 7	2.086 9	391.7	2274.0	2665.8	391.6	2498.8	0.80
0.90	96.71	0.001 041 2	1.869 1	405.2	2265.6	2670.9	405.1	2502.7	0.90
1.00	99.63	0.001 043 4	1.693 7	417.5	2257.9	2675.4	417.4	2506.0	1.00
1.013 25	100.00	0.001 043 7	1.673 0	419.1	2256.9	2676.0	419.0	2506.5	1.013 25
1.20	104.81	0.001 047 6	1.428 1	439.4	2244.1	2683.4	439.3	2512.0	1.20
1.40	109.32	0.001 051 3	1.236 3	458.4	2231.9	2690.3	458.3	2517.2	1.40
1.60	113.32	0.001 054 7	1.091 1	475.4	2220.9	2696.2	475.2	2521.6	1.60
1.80	116.93	0.001 057 9	0.977 18	490.7	2210.8	2701.5	490.5	2525.6	1.80
2.00	120.23	0.001 060 8	0.885 40	504.7	2201.6	2706.3	504.5	2529.2	2.00
2.50	127.43	0.001 067 6	0.718 40	535.4	2181.0	2716.4	535.1	2536.8	2.50
3.00	133.54	0.001 073 5	0.605 53	561.4	2163.2	2724.7	561.1	2543.0	3.00
3.50	138.88	0.001 078 9	0.523 97	584.3	2147.3	2731.6	583.9	2548.2	3.50
4.00	143.63	0.001 083 9	0.462 20	604.7	2132.9	2737.6	604.3	2552.7	4.00
4.50	147.92	0.001 088 5	0.413 73	623.2	2119.7	2742.9	622.7	2556.7	4.50
5.00	151.85	0.001 092 8	0.374 66	640.1	2107.4	2747.5	639.6	2560.2	5.00
6.00	158.84	0.001 100 9	0.315 46	670.4	2085.0	2755.5	669.7	2566.2	6.00
7.00	164.96	0.001 108 2	0.272 68	697.1	2064.9	2762.0	696.3	2571.1	7.00
8.00	170.41	0.001 115 0	0.240 26	720.9	2046.5	2767.5	720.0	2575.3	8.00
9.00	175.36	0.001 121 3	0.214 82	742.6	2029.5	2772.1	741.6	2578.8	9.00
10.00	179.88	0.001 127 4	0.194 30	762.6	2013.6	2776.2	761.5	2581.9	10.00
11.00	184.06	0.001 133 1	0.177 39	781.1	1991.6	2779.7	779.9	2584.6	11.00
12.00	187.96	0.001 138 6	0.163 21	798.4	1984.3	2782.7	797.0	2586.8	12.00
13.00	191.60	0.001 143 8	0.151 14	814.7	1970.7	2785.4	813.2	2588.9	13.00
14.00	195.04	0.001 148 9	0.140 73	830.1	1957.7	2787.8	828.5	2590.8	14.00
15.00	198.28	0.001 153 8	0.131 67	844.6	1945.3	2789.9	842.7	2592.4	15.00
16.00	201.37	0.001 158 6	0.123 70	858.5	1933.2	2791.7	856.6	2593.8	16.00
17.00	204.30	0.001 163 3	0.116 64	871.8	1921.6	2793.4	869.8	2595.1	17.00
18.00	207.11	0.001 167 8	0.110 33	884.5	1910.3	2794.8	882.4	2596.2	18.00
19.00	209.79	0.001 172 3	0.104 67	896.8	1899.3	2796.1	894.6	2597.2	19.00
20.00	212.37	0.001 176 6	0.099 549	908.6	1888.7	2797.2	906.2	2598.1	20.00
25.00	223.94	0.001 197 2	0.079 915	961.9	1839.0	2800.9	958.9	2601.1	25.00
30.00	233.84	0.001 216 3	0.066 632	1008.3	1794.0	2802.3	1004.7	2602.4	30.00
35.00	242.54	0.001 234 5	0.057 028	1049.7	1752.2	2802.0	1045.4	2602.4	35.00
40.00	250.33	0.001 252 1	0.049 749	1087.4	1712.9	2800.3	1082.4	2601.3	40.00
45.00	257.41	0.001 269 1	0.044 035	1122.1	1675.6	2797.7	1116.4	2599.5	45.00
50.00	263.92	0.001 285 8	0.039 425	1154.5	1639.7	2794.2	1148.1	2597.1	50.00
55.00	269.94	0.001 302 3	0.035 624	1184.9	1605.0	2789.9	1177.7	2594.0	55.00
60.00	275.56	0.001 318 7	0.032 433	1213.7	1571.3	2785.0	1205.8	2590.4	60.00
65.00	280.83	0.001 335 0	0.029 714	1241.2	1538.3	2779.5	1232.5	2586.4	65.00
70.00	285.80	0.001 351 4	0.027 368	1267.5	1506.0	2773.4	1258.0	2581.8	70.00
75.00	290.51	0.001 367 8	0.025 323	1292.7	1474.1	2766.9	1282.4	2577.0	75.00
80.00	294.98	0.001 384 3	0.023 521	1317.2	1442.7	2759.9	1306.1	2571.7	80.00
85.00	299.24	0.001 401 0	0.021 923	1340.8	1411.6	2752.4	1328.9	2566.1	85.00
90.00	303.31	0.001 417 9	0.020 493	1363.8	1380.8	2744.6	1351.0	2560.2	90.00
95.00	307.22	0.001 435 1	0.019 206	1386.2	1350.2	2736.3	1372.6	2553.8	95.00
100.00	310.96	0.001 452 6	0.018 041	1408.1	1319.7	2727.7	1393.6	2547.3	100.00
110.00	318.04	0.001 488 7	0.016 007	1450.6	1258.8	2709.3	1434.2	2533.2	110.00
120.00	324.64	0.001 526 7	0.014 285	1491.7	1197.5	2689.2	1473.4	2517.8	120.00
130.00	330.81	0.001 567 1	0.012 800	1531.9	1135.1	2667.0	1511.5	2500.6	130.00
140.00	336.63	0.001 610 5	0.011 498	1571.5	1070.9	2642.4	1549.0	2481.4	140.00
150.00	342.12	0.001 657 8	0.010 343	1610.9	1004.2	2615.1	1586.0	2460.0	150.00
160.00	347.32	0.001 710 2	0.009 309 9	1650.4	934.5	2584.9	1623.0	2435.9	160.00
170.00	352.26	0.001 769 5	0.008 372 1	1691.6	860.0	2551.6	1661.5	2409.3	170.00
180.00	356.96	0.001 839 9	0.007 497 3	1734.8	779.0	2513.9	1701.7	2378.9	180.00
190.00	361.44	0.001 926 2	0.006 675 9	1778.7	691.8	2470.5	1742.1	2343.7	190.00
200.00	365.71	0.002 037 4	0.005 874 5	1826.6	591.6	2418.2	1785.9	2300.7	200.00
210.00	369.79	0.002 201 8	0.005 022 5	1886.3	461.2	2347.5	1840.1	2242.0	210.00
220.00	373.78	0.002 667 5	0.003 734 7	2010.3	186.3	2196.6	1951.6	2144.4	220.00
221.20	374.15	0.003 170 0	0.003 170 0	2107.4	0	2107.4	2037.1	2037.3	221.20

PROPRIETA' TERMODINAMICHE DELL'ACQUA - VAPORE SURRISCALDATO

TAB. 3A

Volume specifico v , m³/kg; Entalpia h , kJ/kg; Entropia s , kJ/kgK

(temp. Sat. °C)		50	100	150	200	250	300	350	400	500	600	700	800
50.00 (263.9)	v	0.00101	0.001041	0.001088	0.001153	0.001249	0.045 301	0.051 941	0.057 791	0.068 494	0.078 616	0.088 446	0.098 093
	h	213.55	422.74	634.96	853.79	1085.76	29255	3071.2	3198.3	3433.7	3664.5	3897.9	4135.3
	s	0.70119	1.30304	1.83663	2.32525	2.791	6.2105	6.4545	6.6508	6.9770	7.2578	7.5108	7.7431
60.00 (275.6)	v	0.001009	0.001041	0.001087	0.001152	0.001248	0.036 145	0.042 222	0.047 379	0.056 592	0.065 184	0.073 478	0.081 587
	h	214.41	423.49	635.58	854.21	1085.75	2885.0	3045.8	3180.1	3422.2	3656.2	3891.7	4130.7
	s	0.70072	1.30227	1.83554	2.3237	2.78859	6.0692	6.3386	6.5462	6.8818	7.1664	7.4217	7.6550
70.00 (285.8)	v	0.001009	0.00104	0.001086	0.001151	0.001246	0.029 457	0.035 233	0.039 922	0.048 086	0.055 590	0.062 787	0.069 798
	h	215.26	424.25	636.21	854.63	1085.75	2839.4	3018.7	3161.2	3410.6	3647.9	3885.4	4126.0
	s	0.70026	1.30149	1.83445	2.32217	2.78621	5.9327	6.2333	6.4536	6.7993	7.0880	7.3456	7.5808
80.00 (295.0)	v	0.001009	0.00104	0.001086	0.00115	0.001244	0.024 264	0.029 948	0.034 310	0.041 704	0.048 394	0.054 770	0.060 956
	h	216.12	425	636.84	855.06	1085.77	2786.8	2989.9	3141.6	3398.8	3639.5	3879.2	4121.5
	s	0.69979	1.30072	1.83337	2.32064	2.78386	5.7942	6.1349	6.3694	6.7262	7.0191	7.2790	7.5158
90.00 (303.3)	v	0.001008	0.001039	0.001085	0.001149	0.001245	0.01402	0.025 792	0.029 29	0.036 737	0.042 798	0.048 534	0.054 080
	h	216.98	425.75	637.47	855.49	1085.79	1344.55	2959.0	3121.2	3386.8	3631.1	3873.0	4116.7
	s	0.69933	1.29995	1.83229	2.31912	2.78153	3.25329	6.0408	6.2915	6.6600	6.9574	7.2196	7.4579
100.00 (311.0)	v	0.001008	0.001039	0.001084	0.001148	0.001241	0.001398	0.022 421	0.026 408	0.032 760	0.038 320	0.043 546	0.048 580
	h	217.84	426.5	638.1	855.92	1085.83	1343.36	2925.8	3099.9	3374.6	3622.7	3866.8	4112.0
	s	0.69887	1.29919	1.83121	2.31761	2.77923	3.24878	5.9489	6.2182	6.5994	6.9013	7.1660	7.4058
125.00 (327.8)	v	0.001007	0.001037	0.001083	0.001146	0.001236	0.001388	0.016 122	0.020 010	0.025 590	0.030 259	0.034 510	0.038 682
	h	219.99	428.39	639.67	857.02	1085.96	1340.65	2828.0	3042.9	3343.3	3601.4	3851.1	4100.3
	s	0.69771	1.29728	1.82854	2.31387	2.77357	3.23797	5.7155	6.0481	6.4654	6.7796	7.0504	7.2942
150.00 (342.1)	v	0.001006	0.001036	0.001081	0.001143	0.001232	0.001378	0.011 462	0.015 661	0.020 795	0.024 884	0.028 587	0.032 086
	h	222.13	430.27	641.26	858.14	1086.16	1338.25	2694.8	2979.1	3310.6	3579.8	3835.4	4088.6
	s	0.69656	1.29638	1.8259	2.31018	2.76804	3.22776	5.4467	5.8876	6.3487	6.6764	6.9536	7.2013
175.00 (354.6)	v	0.001005	0.001036	0.00108	0.001141	0.001229	0.001369	0.001716	0.012 460	0.017 359	0.021 043	0.024 314	0.027 376
	h	224.27	432.16	642.85	859.27	1096.41	1336.14	1663.62	2906.3	3276.5	3557.8	3819.7	4077.0
	s	0.69541	1.29351	1.82328	2.30655	2.76265	3.21808	3.764	5.7274	6.2432	6.5858	6.8698	7.1215
200.00 (365.7)	v	0.001003	0.001034	0.001078	0.001139	0.001225	0.001361	0.001666	0.009 947 0	0.014 771	0.018 161	0.021 111	0.023 845
	h	226.41	434.05	644.45	860.43	1086.72	1334.26	1647.18	2820.5	3241.1	3535.5	3803.8	4065.3
	s	0.69427	1.29614	1.82068	2.30296	2.75737	3.20885	3.73084	5.5585	6.1456	6.5043	6.7953	7.0511
300.00	v	0.000999	0.001029	0.001072	0.00113	0.001211	0.001322	0.001554	0.002 830 6	0.008 680 8	0.011 436	0.013 647	0.015 619
	h	234.95	441.62	650.9	865.2	1088.42	1328.69	1610.04	2161.8	3085.0	3443.0	3739.7	4018.5
	s	0.68971	1.2843	1.81053	2.28907	2.73735	3.17565	3.64552	4.4896	5.7972	6.2340	6.5560	6.8288
400.00	v	0.000995	0.001024	0.001066	0.001122	0.001198	0.001308	0.00149	0.001 909 1	0.005 615 6	0.008 088 4	0.009 930 2	0.011 521
	h	243.46	449.22	657.44	870.2	1090.76	1325.39	1589.69	1934.1	2906.8	3346.4	3674.8	3971.7
	s	0.68519	1.27714	1.80072	2.27584	2.71879	3.14688	3.58848	4.1190	5.4762	6.0135	6.3701	6.6606
500.00	v	0.000991	0.00102	0.001061	0.001114	0.001187	0.001287	0.001444	0.001 729 1	0.003 882 2	0.006 111 3	0.007 719 7	0.009 075 9
	h	251.94	456.83	664.06	865.4	1093.61	1323.69	1576.39	1877.7	2723.0	3248.3	3610.2	3925.3
	s	0.68069	1.27014	1.79123	2.26319	2.70145	3.12127	3.54361	4.0083	5.1782	5.8207	6.2138	6.5222
600.00	v	0.000988	0.001016	0.001055	0.001107	0.001176	0.00127	0.001408	0.001 632 4	0.002 915 5	0.004 835 0	0.006 269 0	0.007 460 3
	h	260.39	464.46	670.74	880.76	1096.88	1323.17	1567.15	1847.3	2570.6	3151.6	3547.0	3879.6
	s	0.67622	1.26331	1.78203	2.25105	2.68513	3.09806	3.5059	3.9383	4.9374	5.6477	6.0775	6.4031
700.00	v	0.000984	0.001012	0.00105	0.001101	0.001166	0.001254	0.001379	0.001 567 1	0.002 466 8	0.003 971 9	0.005 256 6	0.006 320 8
	h	268.81	472.1	677.48	886.27	1100.51	1323.57	1560.58	1827.8	2467.1	3060.4	3486.3	3835.3
	s	0.67177	1.25662	1.76308	2.23937	2.66967	3.07674	3.473	3.8855	4.7688	5.4931	5.9562	6.2979
800.00	v	0.000980	0.001008	0.001045	0.001094	0.001157	0.00124	0.001355	0.001 518 0	0.002 188 1	0.003 379 2	0.004 519 3	0.005480 5
	h	277.2	479.75	684.28	891.92	1104.43	1324.7	1555.92	1814.2	2397.4	2980.3	3428.7	3792.8
	s	0.66733	1.25006	1.76438	2.22811	2.65497	3.05696	3.4436	3.8425	4.6488	5.3595	5.8470	6.2034
900.00	v	0.000977	0.001004	0.001041	0.001088	0.001149	0.001227	0.001334	0.001 478 8	0.002 012 9	0.002 966 8	0.003 964 2	0.004 840 7
	h	285.55	487.4	691.12	897.87	1108.62	1326.43	1552.7	1804.6	2349.9	2913.5	3374.6	3752.4
	s	0.6629	1.24363	1.75591	2.21721	2.64093	3.03845	3.41686	3.8059	4.5602	5.2468	5.7479	6.1179
1000.00	v	0.000973	0.001	0.001036	0.001082	0.001141	0.001216	0.001315	0.001 446 4	0.001 893 4	0.002 668 1	0.003 535 6	0.004 341 1
	h	293.87	495.07	698	903.53	1113.02	1328.65	1550.6	1797.6	2316.1	2857.5	3324.4	3714.3
	s	0.65848	1.23732	1.74764	2.20666	2.62748	3.02102	3.39225	3.7738	4.4913	5.1505	5.6579	6.0397