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Simbologia (utilizzata nel Corso)

Simbolo	Significato	Forma	Unità di misura
a	diffusività termica		[m²/s]
	fattore di assorbimento sonoro		---
A	area		[m²]
	assorbimento sonoro		[m²]
Bi	numero di Biot	h L/k	---
c_p	calore specifico a press. costante		[J/kg K]
c_v	calore specifico a vol. costante		[J/kg K]
COP	coefficiente di prestazione cicli inversi		---
D	diametro		[m]
f	frequenza		[1/s]
	fattore di attrito		---
f'	coeff. di perdita di carico concentrata		---
Fo	numero di Fourier	$Fo = a\tau/x^2$	---
g	accelerazione di gravità	$g = 9.806 m/s^2$	[m/s²]
G	irradianza		[W/m²]
Gr	numero di Grashof	$Gr = \beta g (T_p - T_\infty) L^3/\nu^2$	---
G_v	portata volumetrica		[m³/s]
i	umidità relativa	$i = \rho_v/\rho_{vs}$	---
h	coefficiente di scambio termico convettivo		[W/m²K]
	entalpia specifica		[J/kg]
h'	entalpia specifica riferita all'unità di massa dell'aria secca		[J/kg$_{as}$]
h_a, h_m	carico di attrito, carico motore		[m]
H	entalpia totale		[J]
k	conducibilità termica		[W/mK]
K	trasmittanza		[W/K]
L	lunghezza		[m]
	lavoro		[J]
L	lavoro specifico		[J/kg]
L_p	livello di pressione sonora	$10\log_{10}(p^2/p^2_0)$	---
LMTD= ΔT_m	differenza di temperatura media logaritmica		[K]
m	massa		[kg]
$\dot{m}$	portata massica		[kg/s]
m	massa molecolare		[kg/kmol]
n	numero di kmoli		---
Nu	numero di Nusselt	Nu = h L/k	---
p	pressione		[Pa]
P	potenza		[W]
$\dot{Q}$	flusso termico		[W]
Q	calore		[J]
Q	calore specifico		[J/kg]
R	resistenza termica		[K/W]
	potere fonoisolante		---
R	costante universale dei gas	*R* = 8314	[J/kmol K]
R_1	costante particolare del gas		[J/kg K]
Re	numero di Reynolds	$Re = w L / \nu$	---
s	entropia specifica		[J/kgK]
S	entropia		[J/K]
T	temperatura		[K]
u	energia interna specifica		[J/kg]
U	energia interna		[J]
v	volume specifico		[m³/kg]
V	volume		[m³]

w	velocità		[m/s]
x	coordinata assiale nella direzione del moto		[m]
y	grado igrometrico		---
z	altezza		[m]

Simboli Greci

α	assorptività		---
β	coeff. di dilatazione termica volumetrica	$\beta = (dv/dT)_p/v$	[1/K]
ε	emissività		---
γ	rapporto c_p/c_v		---
η	frazione utilizzata, efficienza di aletta		---
λ	lunghezza d'onda		[m]
μ	viscosità dinamica		[kg/s m]
ν	viscosità cinematica		[m²/s]
ρ	densità		[kg/m^3]
ρ_c, ρ_e	rendimento isoentropico di compressione ed espansione		---
σ	costante di Stefan Boltzman	$\sigma=5.67*10^{-8}$	[W/m^{2}K^4]
τ	tempo		[s]

Pedici

as	dell'aria secca
e	lato esterno
g	della fase aeriforme
i	ingresso, lato interno
j	del componente j-esimo
l	del liquido
p	di parete
s	isoentropico, alla saturazione
u	uscita
v	del vapore
∞	riferito alle condizioni indisturbate

Apici

'	riferito all'unità di lunghezza
"	riferito all'unità di area
'''	riferito all'unità di volume

Dati fondamentali - (T=300K, p=1bar)						
	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
Vapor acqueo ($p=p_{sat}$)	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

Entropia gas perfetti alla pressione di 1 bar s_r [kJ/kg K]						
T[K]	Azoto	Idrogeno	CO	Ossigeno	Aria	CO_2
260	6.7036	65.4000	6.3214	6.2906	6.7276	4.7477
300	6.8536	65.4500	7.0714	6.4219	6.8726	4.8659
400	7.1536	69.6500	7.3714	6.6906	7.1626	5.1227
500	7.3893	72.9000	7.6071	6.9031	7.3904	5.3409
600	7.5857	75.6500	7.7964	7.0844	7.5803	5.5318
700	7.7500	77.8500	7.9714	7.2313	7.7459	5.7045
800	7.8929	79.8500	8.1214	7.3781	7.8909	5.8591
900	8.0321	81.5500	8.2571	7.5031	8.0221	5.9977
1000	8.1536	83.1500	8.3821	7.6188	8.1395	6.1273
1200	8.3714	85.9500	8.6036	7.8188	8.3500	6.3568
1400	8.5571	88.3500	8.7929	7.9938	8.5330	6.5568
1600	8.7250	90.5500	8.9607	8.1469	8.6952	6.7341
1800	8.8714	92.5000	9.1107	8.2313	8.8402	6.8932
2000	9.0071	94.2500	9.2464	8.4063	8.9713	7.0364
2200	9.1321	95.9000	9.3714	8.5188	9.0922	7.1682
2400	9.2429	97.4500	9.4857	8.6219	9.2026	7.2886
2600	9.3664	98.9000	9.5893	8.7219	9.3027	7.4000
2800	9.4464	100.2500	9.6857	8.8125	9.3959	7.5045
3000	9.5393	101.5000	9.7786	8.8969	9.4891	7.6023

Dai valori dell'entropia di riferimento si deducono quelli per p qualunque aggiungendo $-R1 \log_n(p)$, p espressa in bar

$s = s_r - R1 \log_n(p)$

	PROPRIETA' TERMODINAMICHE DELL'ACQUA (liquido e vapore) ALLA SATURAZIONE	TAB. 2A

T	p	volume specifico		m^3/kg	Entalpia		kJ/kg	Entropia		kJ/kg K	t
°C	bar	v_l	(v_v-v_l)	v_v	h_l	r	h_v	s_l	r/T	s_v	°C
0	0.006 017	0.001 000 2	206.298	206.299	-0.0	2501.6	2501.6	-0.0	9.1578	9.1578	0
0.01	0.006 112	0.001 000 2	206.162	206.163	+0.0	2501.6	2501.6	0	9.1575	9.1575	0.01
2	0.007 055	0.001 000 1	179.922	179.923	8.4	2496.8	2505.2	0.0306	9.0741	9.1047	2
4	0.008 129	0.001 000 0	157.271	157.272	16.8	2492.1	2508.9	0.0611	8.9915	9.0526	4
6	0.009 345	0.001 000 0	137.779	137.780	25.2	2487.4	2512.6	0.0913	8.9102	9.0015	6
8	0.010 720	0.001 000 1	120.965	120.966	33.6	2482.6	2516.2	0.1213	8.8300	8.9513	8
10	0.012 270	0.001 000 3	106.429	106.430	42.0	2477.9	2519.9	0.1510	8.7510	8.9020	10
12	0.014 014	0.001 000 4	93.834	93.835	50.4	2473.2	2523.6	0.1805	8.6731	8.8536	12
14	0.015 973	0.001 000 7	82.899	82.900	58.8	2468.5	2527.2	0.2098	8.5963	8.8060	14
15	0.017 139	0.001 000 8	77.977	77.978	62.9	2466.1	2529.1	0.2243	8.5582	8.7826	15
16	0.018 168	0.001 001 0	73.383	73.384	67.1	2463.8	2530.9	0.2388	8.5205	8.7593	16
18	0.020 624	0.001 001 3	65.086	65.087	75.5	2459.0	2534.5	0.2677	8.4458	8.7135	18
20	0.023 366	0.001 001 7	57.837	57.838	83.9	2454.3	2538.2	0.2963	8.3721	8.6684	20
25	0.031 660	0.001 002 9	43.401	43.402	104.8	2442.5	2547.3	0.3670	8.1922	8.5592	25
30	0.042 415	0.001 004 3	32.928	32.929	125.7	2430.7	2556.4	0.4365	8.0181	8.4546	30
35	0.056 216	0.001 006 0	25.244	25.245	146.6	2418.8	2565.4	0.5049	7.8495	8.3543	35
40	0.073 750	0.001 007 8	19.545	19.546	167.5	2406.9	2574.4	0.5721	7.6861	8.2583	40
45	0.095 820	0.001 009 9	15.275	15.276	188.4	2394.9	2583.3	0.6383	7.5277	8.1661	45
50	0.123 35	0.001 012 0	12.045	12.046	209.3	2382.9	2592.2	0.7035	7.3741	8.0776	50
55	0.157 41	0.001 014 5	9.577 9	9.578 9	230.2	2370.8	2601.0	0.7677	7.2248	7.9925	55
60	0.199 20	0.001 017 1	7.677 5	7.678 5	251.1	2358.6	2609.7	0.8310	7.0798	7.9108	60
65	0.250 09	0.001 019 9	6.201 3	6.202 3	272.0	2346.3	2618.4	0.8933	6.9388	7.8321	65
70	0.311 62	0.001 022 8	5.045 3	5.046 3	293.0	2334.0	2626.9	0.9548	6.8017	7.7565	70
75	0.385 49	0.001 025 9	4.133 1	4.134 1	313.9	2321.5	2635.4	1.0154	6.6681	7.6835	75
80	0.473 60	0.001 029 2	3.408 1	3.409 1	344.9	2308.8	2643.8	1.0753	6.5380	7.6133	80
85	0.578 03	0.001 032 6	2.827 8	2.828 8	355.9	2296.1	2652.0	1.1343	6.4111	7.5454	85
90	0.701 09	0.001 036 1	2.360 3	2.361 3	376.9	2283.2	2660.1	1.1925	6.2873	7.4798	90
95	0.845 26	0.001 039 9	1.981 2	1.982 2	398.0	2270.2	2668.1	1.2501	6.1665	7.4166	95
100	1.013 25	0.001 043 7	1.672 0	1.673 0	419.1	2256.9	2676.0	1.3069	6.0485	7.3554	100
105	1.208 0	0.001 047 7	1.418 3	1.419 3	440.2	2243.6	2683.7	1.3630	5.9331	7.2962	105
110	1.432 7	0.001 051 9	1.208 9	1.209 9	461.3	2230.0	2691.3	1.4185	5.8203	7.2388	110
115	1.690 6	0.001 056 2	1.035 3	1.036 3	482.5	2216.2	2698.7	1.4733	5.7099	7.1832	115
120	1.985 4	0.001 060 6	0.890 46	0.891 52	503.7	2202.2	2706.0	1.5276	5.6017	7.1293	120
125	2.321 0	0.001 065 2	0.769 17	0.770 23	525.0	2188.0	2713.0	1.5813	5.4957	7.0769	125
130	2.701 3	0.001 070 0	0.667 07	0.668 14	546.3	2173.6	2719.9	1.6344	5.3917	7.0261	130
135	3.130 8	0.001 075 0	0.580 74	0.581 81	567.7	2158.9	2726.6	1.6869	5.2897	6.9766	135
140	3.613 8	0.001 080 1	0.507 41	0.508 49	589.1	2144.0	2733.1	1.7390	5.1894	6.9284	140
145	4.155 2	0.001 085 3	0.444 89	0.445 97	610.6	2128.7	2739.3	1.7906	5.0910	6.8815	145
150	4.760 0	0.001 090 8	0.391 36	0.392 45	632.1	2113.2	2745.4	1.8416	4.9941	6.8358	150
155	5.433 3	0.001 096 4	0.345 55	0.346 44	653.8	2097.4	2751.2	1.8923	4.8989	6.7911	155
160	6.180 6	0.001 102 2	0.305 66	0.306 76	675.5	2081.3	2756.7	1.9425	4.8050	6.7473	160
165	7.007 7	0.001 108 2	0.271 29	0.272 40	697.3	2064.8	2762.0	1.9923	4.7126	6.7048	165
170	7.920 2	0.001 114 5	0.241 44	0.242 55	719.1	2047.9	2767.1	2.0416	4.6214	6.6630	170
175	8.924 4	0.001 120 9	0.215 42	0.216 54	741.1	2030.7	2771.8	2.0906	4.5314	6.6221	175
180	10.027	0.001 127 5	0.192 67	0.193 80	763.1	2013.2	2776.3	2.1393	4.4426	6.5819	180
185	11.233	0.001 134 4	0.172 63	0.173 86	785.3	1995.2	2780.4	2.1876	4.3548	6.5424	185
190	12.551	0.001 141 5	0.155 18	0.156 32	807.5	1976.7	2784.3	2.2356	4.2680	6.5036	190
195	13.987	0.001 148 9	0.139 69	0.140 84	829.9	1957.9	2787.8	2.2833	4.1821	6.4654	195
200	15.549	0.001 156 5	0.126 01	0.127 16	852.4	1938.6	2790.9	2.3307	4.0971	6.4278	200
205	17.243	0.001 164 4	0.113 87	0.115 03	875.0	1918.8	2793.8	2.3778	4.0128	6.3906	205
210	19.077	0.001 172 6	0.103 07	0.104 24	897.7	1898.5	2796.2	2.4247	3.9293	6.3539	210
215	21.060	0.001 181 1	0.093 45	0.094 625	920.6	1877.6	2798.3	2.4713	3.8463	6.3176	215
220	23.198	0.001 190 0	0.084 85	0.086 038	943.7	1856.2	2799.9	2.5178	3.7639	6.2817	220
225	25.501	0.001 199 2	0.071 15	0.078 349	966.9	1834.3	2801.2	2.5641	3.6820	6.2461	225
230	27.976	0.001 208 7	0.070 24	0.071 450	990.3	1811.7	2802.0	2.6102	3.6006	6.2107	230
235	30.632	0.001 218 7	0.064 03	0.064 245	1013.8	1788.5	2802.3	2.6561	3.5194	6.1756	235
240	33.478	0.001 229 1	0.058 42	0.059 645	1037.6	1764.6	2802.2	2.7020	3.4386	6.1406	240
245	36.523	0.001 239 9	0.051 37	0.054 606	1061.6	1740.0	2801.6	2.7478	3.3579	6.1057	245
250	39.776	0.001 251 3	0.048 79	0.050 037	1085.8	1714.7	2800.4	2.7935	3.2773	6.0708	250
255	43.246	0.001 263 2	0.048 79	0.045 896	1110.2	1688.5	2798.7	2.8392	3.1968	6.0359	255
260	46.943	0.001 275 6	0.040 86	0.042 130	1134.9	1661.5	2796.4	2.8848	3.1161	6.0010	260
265	50.877	0.001 288 7	0.037 43	0.038 710	1159.9	1633.5	2793.5	2.9306	3.0353	5.9658	265
270	55.058	0.001 302 5	0.034 29	0.035 588	1185.2	1604.6	2789.9	2.9763	2.9541	5.9304	270
275	59.496	0.001 317 0	0.031 42	0.032 736	1210.9	1574.7	2785.5	3.0222	2.8725	5.8947	275
280	64.202	0.001 332 4	0.028 80	0.030 126	1236.8	1543.6	2780.4	3.0683	2.7903	5.8586	280
285	69.186	0.001 348 7	0.026 38	0.027 733	1263.2	1511.3	2774.5	3.1146	2.7074	5.8220	285
290	74.461	0.001 365 9	0.024 17	0.025 535	1290.0	1477.6	2767.6	3.1611	2.6237	5.7848	290
295	80.037	0.001 384 4	0.022 13	0.023 513	1317.3	1442.6	2759.8	3.2079	2.5389	5.7469	295
300	85.927	0.001 404 1	0.020 25	0.021 649	1345.1	1406.0	2751.0	3.2552	2.4529	5.7081	300
305	92.144	0.001 425 2	0.018 41	0.019 927	1373.4	1367.7	2741.1	3.3029	2.3656	5.6685	305
310	98.700	0.001 443 0	0.016 88	0.018 334	1402.4	1327.6	2730.0	3.3512	2.2766	5.6278	310
315	105.61	0.001 472 6	0.015 09	0.016 856	1432.1	1285.5	2717.6	3.4002	2.1856	5.5858	315
320	112.89	0.001 499 5	0.013 98	0.015 480	1462.6	1241.1	2703.7	3.4500	2.0923	5.5423	320
325	120.56	0.001 528 9	0.012 67	0.014 195	1494.0	1194.0	2688.0	3.5008	1.9961	5.4969	325
330	128.63	0.001 561 5	0.011 43	0.012 989	1526.5	1143.6	2670.2	3.5528	1.8962	5.4490	330
335	137.12	0.001 597 8	0.010 26	0.011 854	1560.3	1089.5	2649.7	3.6063	1.7916	5.3979	335
340	146.05	0.001 638 7	0.009 14	0.010 780	1595.5	1030.7	2626.2	3.6616	1.6811	5.3427	340
345	155.45	0.001 685 8	0.008 07	0.009 763	1632.5	966.4	2598.9	3.7193	1.5636	5.2828	345
350	165.35	0.001 741 1	0.007 06	0.008 799	1671.9	895.7	2567.7	3.7800	1.4376	5.2177	350
355	175.77	0.001 808 5	0.006 05	0.007 859	1716.6	813.8	2530.4	3.8489	1.2953	5.1442	355
360	186.75	0.001 895 9	0.005 04	0.006 939	1764.2	721.3	2485.4	3.9210	1.1390	5.060	360
365	198.33	0.002 016 0	0.003 99	0.006 011	1818.0	610.0	2428.0	4.0021	0.9558	4.9579	365
370	210.54	0.002 213 6	0.002 76	0.004 972	1890.2	452.6	2342.8	4.1108	0.7036	4.8144	370
374	220.81	0.002 842 7	0.000 63	0.003 465	2046.7	109.5	2156.2	4.3493	0.1692	4.5185	374
374.15	221.20	0.003 17	0	0.003 17	2107.4	0	2107.4	4.4429	0	4.4429	374.15

p	T	Volume specifico m^3/kg		Entalpia kJ/kg			Energia interna kJ/kg		Entropia kJ/kg K			p
bar	°C	v_l	v_v	h_l	r	h_v	u_l	u_v	s_l	r/T	s_v	bar
0.006 02	0	0.001 000 2	206.298 7	-0.0	2501.6	2501.6	-0.0	2375.6	-0.0	9.1578	9.1578	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	9.1575	9.1575	0.006 11
0.010	6.98	0.001 000 1	129.210 7	29.3	2485.0	2514.4	29.3	2385.2	0.1060	8.8706	8.9767	0.010
0.020	17.51	0.001 001 2	67.011 6	73.5	2460.2	2533.6	73.5	2399.6	0.2606	8.4640	8.7246	0.020
0.030	24.10	0.001 002 7	45.670 0	101.0	2444.6	2545.6	101.0	2408.6	0.3543	8.2242	8.5785	0.030
0.040	28.98	0.001 004 0	34.803 3	121.4	2433.1	2554.5	121.4	2415.3	0.4225	8.0530	8.4755	0.040
0.050	32.90	0.001 005 2	28.194 5	137.8	2423.8	2561.6	137.8	2420.6	0.4763	7.9197	8.3960	0.050
0.060	36.18	0.001 006 4	23.740 6	151.5	2416.0	2567.5	151.5	2425.1	0.5209	7.8103	8.3312	0.060
0.070	39.03	0.001 007 4	20.530 4	163.4	2409.2	2572.6	163.4	2428.9	0.5591	7.7176	8.2767	0.070
0.080	41.54	0.001 008 4	18.103 8	173.9	2403.2	2577.1	173.9	2432.3	0.5926	7.6370	8.2295	0.080
0.090	43.79	0.001 009 4	16.203 4	183.3	2397.9	2581.1	183.3	2435.3	0.6224	7.5657	8.1881	0.090
0.10	45.83	0.001 010 2	14.673 7	191.8	2392.9	2584.8	191.8	2438.1	0.6493	7.5018	8.1511	0.10
0.15	54.00	0.001 014 0	10.022 1	226.0	2373.2	2599.2	226.0	2448.9	0.7549	7.2544	8.0093	0.15
0.20	60.09	0.001 017 2	7.649 2	251.5	2358.4	2609.9	251.5	2456.9	0.8321	7.0773	7.9094	0.20
0.25	64.99	0.001 019 9	6.204 0	272.0	2346.4	2618.3	272.0	2463.2	0.8933	6.9390	7.8323	0.25
0.30	69.13	0.001 022 3	5.229 0	289.3	2336.1	2625.4	289.6	2468.2	0.9441	6.8254	7.7695	0.30
0.35	72.71	0.001 024 5	4.525 5	304.3	2327.2	2631.5	304.3	2473.1	0.9878	6.7288	7.7166	0.35
0.40	75.89	0.001 026 5	3.993 2	317.7	2319.2	2636.9	317.7	2477.2	1.0261	6.6448	7.6709	0.40
0.45	78.74	0.001 028 4	3.576 1	329.6	2312.0	2641.7	329.6	2480.8	1.0603	6.5703	7.6306	0.45
0.50	81.35	0.001 030 1	3.240 1	340.6	2305.4	2646.0	340.5	2484.0	1.0912	6.5035	7.5947	0.50
0.60	85.95	0.001 033 3	2.731 7	359.9	2293.6	2653.6	359.8	2489.7	1.1455	6.3872	7.5327	0.60
0.70	89.96	0.001 036 1	2.364 7	376.8	2283.3	2660.1	376.3	2494.6	1.1921	6.2883	7.4804	0.70
0.80	93.51	0.001 038 7	2.086 9	391.7	2274.0	2665.8	391.6	2498.8	1.2330	6.2022	7.4352	0.80
0.90	96.71	0.001 041 2	1.869 1	405.2	2265.6	2670.9	405.1	2502.7	1.2696	6.1258	7.3954	0.90
1.00	99.63	0.001 043 4	1.693 7	417.5	2257.9	2675.4	417.4	2506.0	1.3027	6.0571	7.3598	1.00
1.013 25	100.00	0.001 043 7	1.673 0	419.1	2256.9	2676.0	419.0	2506.5	1.3069	6.0485	7.3554	1.013 25
1.20	104.81	0.001 047 6	1.428 1	439.4	2244.1	2683.4	439.3	2512.0	1.3609	5.9375	7.2984	1.20
1.40	109.32	0.001 051 3	1.236 3	458.4	2231.9	2690.3	458.3	2517.2	1.4109	5.8356	7.2465	1.40
1.60	113.32	0.001 054 7	1.091 1	475.4	2220.9	2696.2	475.2	2521.6	1.4550	5.7467	7.2017	1.60
1.80	116.93	0.001 057 9	0.977 18	490.7	2210.8	2701.5	490.5	2525.6	1.4944	5.6677	7.1622	1.80
2.00	120.23	0.001 060 8	0.885 40	504.7	2201.6	2706.3	504.5	2529.2	1.5301	5.5967	7.1268	2.00
2.50	127.43	0.001 067 6	0.718 40	535.4	2181.0	2716.4	535.1	2536.8	1.6072	5.4448	7.0520	2.50
3.00	133.54	0.001 073 5	0.605 53	561.4	2163.2	2724.7	561.1	2543.0	1.6717	5.3192	6.9909	3.00
3.50	138.88	0.001 078 9	0.523 97	584.3	2147.3	2731.6	583.9	2548.2	1.7273	5.2118	6.9392	3.50
4.00	143.63	0.001 083 9	0.462 20	604.7	2132.9	2737.6	604.3	2552.7	1.7764	5.1179	6.8943	4.00
4.50	147.92	0.001 088 5	0.413 73	623.2	2119.7	2742.9	622.7	2556.7	1.8204	5.0342	6.8547	4.50
5.00	151.85	0.001 092 8	0.374 66	640.1	2107.4	2747.5	639.6	2560.2	1.8604	4.9588	6.8192	5.00
6.00	158.84	0.001 100 9	0.315 46	670.4	2085.0	2755.5	669.7	2566.2	1.9308	4.8267	6.7575	6.00
7.00	164.96	0.001 108 2	0.272 68	697.1	2064.9	2762.0	696.3	2571.1	1.9918	4.7134	6.7052	7.00
8.00	170.41	0.001 115 0	0.240 26	720.9	2046.5	2767.5	720.0	2575.3	2.0457	4.6139	6.6596	8.00
9.00	175.36	0.001 121 3	0.214 82	742.6	2029.5	2772.1	741.6	2578.8	2.0941	4.5251	6.6192	9.00
10.00	179.88	0.001 127 4	0.194 30	762.6	2013.6	2776.2	761.5	2581.9	2.1382	4.4447	6.5828	10.00
11.00	184.06	0.001 133 1	0.177 39	781.1	1991.6	2779.7	779.9	2584.6	2.1786	4.3712	6.5498	11.00
12.00	187.96	0.001 138 6	0.163 21	798.4	1984.3	2782.7	797.0	2586.8	2.2160	4.3034	6.5194	12.00
13.00	191.60	0.001 143 8	0.151 14	814.7	1970.7	2785.4	813.2	2588.9	2.2509	4.2404	6.4913	13.00
14.00	195.04	0.001 148 9	0.140 73	830.1	1957.7	2787.8	828.5	2590.8	2.2836	4.1815	6.4651	14.00
15.00	198.28	0.001 153 8	0.131 67	844.6	1945.3	2789.9	842.7	2592.4	2.3144	4.1262	6.4406	15.00
16.00	201.37	0.001 158 6	0.123 70	858.5	1933.2	2791.7	856.6	2593.8	2.3436	4.0740	6.4176	16.00
17.00	204.30	0.001 163 3	0.116 64	871.8	1921.6	2793.4	869.8	2595.1	2.3712	4.0246	6.3958	17.00
18.00	207.11	0.001 167 8	0.110 33	884.5	1910.3	2794.8	882.4	2596.2	2.3976	3.9776	6.3751	18.00
19.00	209.79	0.001 172 3	0.104 67	896.8	1899.3	2796.1	894.6	2597.2	2.4227	3.9327	6.3555	19.00
20.00	212.37	0.001 176 6	0.099 549	908.6	1888.7	2797.2	906.2	2598.1	2.4468	3.8899	6.3367	20.00
25.00	223.94	0.001 197 2	0.079 915	961.9	1839.0	2800.9	958.9	2601.1	2.5542	3.6994	6.2537	25.00
30.00	233.84	0.001 216 3	0.066 632	1008.3	1794.0	2802.3	1004.7	2602.4	2.6455	3.5383	6.1838	30.00
35.00	242.54	0.001 234 5	0.057 028	1049.7	1752.2	2802.0	1045.4	2602.4	2.7252	3.3976	6.1229	35.00
40.00	250.33	0.001 252 1	0.049 749	1087.4	1712.9	2800.3	1082.4	2601.3	2.7965	3.2720	6.0685	40.00
45.00	257.41	0.001 269 1	0.044 035	1122.1	1675.6	2797.7	1116.4	2599.5	2.8612	3.1579	6.0191	45.00
50.00	263.92	0.001 285 8	0.039 425	1154.5	1639.7	2794.2	1148.1	2597.1	2.9207	3.0528	5.9735	50.00
55.00	269.94	0.001 302 3	0.035 624	1184.9	1605.0	2789.9	1177.7	2594.0	2.9758	2.9551	5.9309	55.00
60.00	275.56	0.001 318 7	0.032 433	1213.7	1571.3	2785.0	1205.8	2590.4	3.0274	2.8633	5.8907	60.00
65.00	280.83	0.001 335 0	0.029 714	1241.2	1538.3	2779.5	1232.5	2586.4	3.0760	2.7766	5.8526	65.00
70.00	285.80	0.001 351 4	0.027 368	1267.5	1506.0	2773.4	1258.0	2581.8	3.1220	2.6941	5.8161	70.00
75.00	290.51	0.001 367 8	0.025 323	1292.7	1474.1	2766.9	1282.4	2577.0	3.1658	2.6152	5.7810	75.00
80.00	294.98	0.001 384 3	0.023 521	1317.2	1442.7	2759.9	1306.1	2571.7	3.2077	2.5393	5.7470	80.00
85.00	299.24	0.001 401 0	0.021 923	1340.8	1411.6	2752.4	1328.9	2566.1	3.2480	2.4661	5.7141	85.00
90.00	303.31	0.001 417 9	0.020 493	1363.8	1380.8	2744.6	1351.0	2560.2	3.2867	2.3952	5.6820	90.00
95.00	307.22	0.001 435 1	0.019 206	1386.2	1350.2	2736.3	1372.6	2553.8	3.3242	2.3264	5.6506	95.00
100.00	310.96	0.001 452 6	0.018 041	1408.1	1319.7	2727.7	1393.6	2547.3	3.3606	2.2592	5.6198	100.00
110.00	318.04	0.001 488 7	0.016 007	1450.6	1258.8	2709.3	1434.2	2533.2	3.4304	2.1292	5.5596	110.00
120.00	324.64	0.001 526 7	0.014 285	1491.7	1197.5	2689.2	1473.4	2517.8	3.4971	2.0032	5.5003	120.00
130.00	330.81	0.001 567 1	0.012 800	1531.9	1135.1	2667.0	1511.5	2500.6	3.5614	1.8795	5.4409	130.00
140.00	336.63	0.001 610 5	0.011 498	1571.5	1070.9	2642.4	1549.0	2481.4	3.6241	1.7564	5.3804	140.00
150.00	342.12	0.001 657 8	0.010 343	1610.9	1004.2	2615.1	1586.0	2460.0	3.6857	1.6323	5.3180	150.00
160.00	347.32	0.001 710 2	0.009 309 9	1650.4	934.5	2584.9	1623.0	2435.9	3.7470	1.5063	5.2533	160.00
170.00	352.26	0.001 769 5	0.008 372 1	1691.6	860.0	2551.6	1661.5	2409.3	3.8106	1.3749	5.1856	170.00
180.00	356.96	0.001 839 9	0.007 497 3	1734.8	779.0	2513.9	1701.7	2378.9	3.8766	1.2362	5.1127	180.00
190.00	361.44	0.001 926 2	0.006 675 9	1778.7	691.8	2470.5	1742.1	2343.7	3.9430	1.0900	5.0330	190.00
200.00	365.71	0.002 037 4	0.005 874 5	1826.6	591.6	2418.2	1785.9	2300.7	4.0151	0.9259	4.9410	200.00
210.00	369.79	0.002 201 8	0.005 022 5	1886.3	461.2	2347.5	1840.1	2242.0	4.1040	0.7172	4.8222	210.00
220.00	373.78	0.002 667 5	0.003 734 7	2010.3	186.3	2196.6	1951.6	2144.4	4.2934	0.2881	4.5814	220.00
221.20	374.15	0.003 170 0	0.003 170 0	2107.4	0	2107.4	2037.1	2037.3	4.4429	0	4.4429	221.20

PROPRIETA' TERMODINAMICHE DELL'ACQUA - VAPORE SURRISCALDATO

Volume specifico v, m^3/kg; Entalpia h, kJ/kg; Entropia s, kJ/kg K

TAB. 3A

Pressione bar (temp. sat.°C)		50	100	150	200	250	300	350	400	500	600	700	800
	v	74.524	86.080	97.628	109.171	120.711	132.251	143.790	155.329	178.405	201.482	224.558	247.634
0.02	h	2594.4	2688.5	2783.7	2880.0	2977.7	3076.8	3177.7	3279.7	3489.2	3705.6	3928.8	4158.7
(17.5)	s	8.9226	9.1934	9.4327	9.6479	9.8441	10.0251	10.1934	10.3512	10.6413	10.9044	11.1464	11.3712
	v	37.240	43.027	48.806	54.580	60.351	66.122	71.892	77.662	89.201	100.740	112.278	123.816
0.04	h	2593.9	2688.3	2783.5	2879.9	2977.6	3076.8	3177.4	3279.7	3489.2	3705.6	3928.8	4158.7
(29.0)	s	8.6016	8.8730	9.1125	9.3279	9.5241	9.7051	9.8735	10.0313	10.3214	10.5845	10.8265	11.0513
	v	24.812	28.676	32.532	37.383	40.232	44.079	47.927	51.773	59.467	67.159	74.852	82.544
0.06	h	2593.5	2688.0	2783.4	2879.8	2977.6	3076.7	3177.4	3279.6	3489.2	3705.6	3928.8	4158.7
(36.2)	s	8.4135	8.6854	8.9251	9.1406	9.3369	9.5179	9.6863	9.8441	10.1342	10.3973	10.6394	10.8642
	v	18.598	21.501	24.395	27.284	30.172	33.058	35.944	38.829	44.599	50.369	56.138	61.908
0.08	h	2593.1	2687.8	2783.2	2879.7	2977.5	3076.7	3177.3	3279.6	3489.1	3705.5	3928.8	4158.7
(41.5)	s	8.2797	8.5521	8.7921	9.0077	9.2041	9.3851	9.5535	9.7113	10.0014	10.2646	10.5066	10.7314
	v	14.869	17.195	19.512	21.825	24.136	26.445	28.754	31.062	35.679	40.295	44.910	49.526
0.10	h	2592.7	2687.5	2783.1	2879.6	2977.4	3076.6	3177.3	3279.6	3489.1	3705.5	3928.8	4158.7
(45.8)	s	8.1757	8.4486	8.6888	8.9045	9.1010	9.2820	9.4504	9.6083	9.8984	10.1616	10.4036	10.6284
	v	0.001012	3.4181	3.8893	4.3560	4.8205	5.2839	5.7467	6.2091	7.1335	8.0574	8.9810	9.9044
0.50	h	209.29	2682.6	2780.1	2877.7	2976.1	3075.7	3176.6	3279.0	3488.7	3705.2	3928.6	4158.5
((81.3)	s	0.70349	7.6953	7.9406	8.1587	8.3564	8.5380	8.7068	8.8649	9.1552	9.4185	9.6606	9.8855
	v	0.001012	1.6955	1.9363	2.1723	2.4061	2.6387	2.8708	3.1025	3.5653	4.0277	4.4898	4.9517
1.00	h	209.33	2676.2	2776.1	2875.4	2974.5	3074.5	3175.6	3278.2	3488.1	3704.8	3928.2	4158.3
(99.6)	s	0.70347	7.3618	7.6137	7.8349	8.0342	8.2166	8.3858	8.5442	8.8348	9.0982	9.3405	9.5654
	v	0.001012	0.001044	0.959 54	1.0804	1.1989	1.3162	1.4328	1.5492	1.7812	2.0129	2.2442	2.4754
2.00	h	209.42	419.14	2768.5	2870.5	2971.2	3072.1	3173.8	3276.7	3487.0	3704.0	3927.6	4157.8
(120.2)	s	0.70342	1.30679	7.2794	7.5072	7.7096	7.8937	8.0638	8.2226	8.5139	8.7776	9.0201	9.2452
	v	0.001012	0.001044	0.633 74	0.716 35	0.796 44	0.875 29	0.953 52	1.0314	1.1865	1.3412	1.4957	1.6499
3.00	h	209.5	419.21	2760.4	2865.5	2967.9	3069.7	3171.9	3275.2	3486.0	3703.2	3927.0	4157.3
(133.5)	s	0.70338	1.30671	7.0771	7.3119	7.5176	7.7034	7.8744	8.0338	8.3257	8.5898	8.8325	9.0577
	v	0.001012	0.001044	0.470 66	0.534 26	0.595 19	0.654 85	0.713 85	0.772 50	0.889 19	1.0054	1.1214	1.2372
4.00	h	209.59	419.29	2752.0	2860.4	2964.5	3067.2	3170.0	3273.6	3484.9	3702.3	3926.4	4156.9
(143.6)	s	0.70333	1.30664	6.9285	7.1708	7.3800	7.5675	7.7395	7.8994	8.1919	8.4563	8.6992	8.9246
	v	0.001012	0.001044	0.001091	0.424 96	0.47443	0.522 58	0.570 05	0.617 16	0.710 78	0.803 95	0.896 85	0.989 56
5.00	h	209.68	419.36	632.16	2855.1	2961.1	3064.8	3168.1	3272.1	3483.8	3701.5	3925.8	4156.4
(151.8)	s	0.70328	1.30656	1.84161	7.0592	7.2721	7.4614	7.6343	7.7948	8.0879	8.3626	8.5957	8.8213
	v	0.001012	0.001043	0.001091	0.352 04	0.393 91	0.434 39	0.474 19	0.513 61	0.591 84	0.669 63	0.747 14	0.824 47
6.00	h	209.76	419.44	632.23	2849.7	2951.6	3062.3	3166.2	3270.6	3482.7	3700.7	3925.1	4155.9
(158.8)	s	0.70324	1.30648	1.8415	6.9662	7.1829	7.3740	7.5479	7.7090	8.0027	8.2678	8.5111	8.7368
	v	0.001012	0.001043	0.001091	0.299 92	0.336 37	0.371 39	0.405 71	0.439 64	0.506 89	0.573 68	0.640 21	0.706 55
7.00	h	209.85	419.51	632.29	2844.2	2954.0	3059.8	3164.3	3269.0	3481.6	3699.9	3924.5	4155.5
(165.0)	s	0.70319	1.3064	1.84139	6.8859	7.1066	7.2997	7.4745	7.6332	7.9305	8.1959	8.4395	8.6653
	v	0.001012	0.001043	0.001091	0.260 79	0.293 21	0.324 14	0.354 34	0.384 16	0.443 17	0.501 72	0.560 01	0.618 11
8.00	h	209.93	419.59	632.35	2838.6	2950.4	3057.3	3162.4	3267.5	3480.5	3699.1	3923.9	4155.0
(170.4)	s	0.70314	1.30632	1.84128	6.8148	7.0397	7.2348	7.4107	7.5729	7.8678	8.1336	8.3773	8.6033
	v	0.001012	0.001043	0.001091	0.230 32	0.259 63	0.278 39	0.314 40	0.341 01	0.393 61	0.445 76	0.497 63	0.549 33
9.00	h	210.02	419.66	632.41	2832.7	2946.8	3054.7	3160.5	3266.0	3479.4	3698.2	3923.3	4154.5
(175.4)	s	0.7031	1.30624	1.84116	6.7508	6.9800	7.1771	7.3540	7.5169	7.8124	8.0785	8.3225	8.5486
	v	0.001012	0.001043	0.00109	0.205 92	0.232 75	0.257 98	0.282 43	0.306 49	0.353 96	0.400 98	0.447 73	0.494 30
10.00	h	210.11	419.74	632.47	2826.8	2943.0	3052.1	3158.5	3264.4	3478.3	3697.4	3922.7	4154.1
(179.9)	s	0.70305	1.30616	1.84105	6.6922	6.9259	7.1251	7.3031	7.4665	7.7627	8.0292	8.2734	8.4997
	v	0.001011	0.001043	0.001090	0.132 38	0.151 99	0.169 70	0.186 53	0.202 92	0.235 03	0.266 66	0.298 03	0.329 21
15.00	h	210.54	420.11	632.78	2794.7	2923.5	3038.9	3148.7	3256.6	3472.8	3693.3	3919.6	4151.7
(198.3)	s	0.70282	1.30577	1.8405	6.4508	6.7099	6.9207	7.1044	7.2709	7.5703	7.8385	8.0838	8.3108
	v	0.001011	0.001043	0.001090	0.001156	0.111 45	0.125 50	0.138 66	0.151 13	0.175 55	0.199 50	0.223 17	0.246 66
20.00	h	210.97	420.49	633.09	852.55	2902.4	3025.0	3138.6	3248.7	3467.3	3689.2	3916.5	4149.4
(212.4)	s	0.70258	1.30538	1.83994	2.32995	6.5454	6.7696	6.9596	7.1296	7.4323	7.7022	7.9485	8.1763
	v	0.001011	0.001043	0.001089	0.001156	0.086 985	0.098 925	0.109 75	0.120 04	0.139 87	0.159 21	0.178 26	0.197 14
25.00	h	211.4	420.86	633.4	852.76	2879.5	3010.4	3128.2	3240.7	3461.7	3685.1	3913.4	4147.0
(223.9)	s	0.70235	1.30499	1.83939	2.32916	6.4077	6.6470	6.8442	7.0178	7.3240	7.5956	7.8431	8.0716
	v	0.001011	0.001042	0.001089	0.001155	0.070 551	0.081 159	0.090 526	0.099 310	0.116 08	0.132 34	0.148 32	0.164 12
30.00	h	211.83	421.24	633.71	852.96	2854.8	2995.1	3117.5	3232.5	3456.5	3681.0	3910.3	4144.7
(233.8)	s	0.70212	1.3046	1.83883	2.32838	6.2857	6.5422	6.7471	6.9246	7.2345	7.5079	7.7564	7.9857
	v	0.001011	0.001042	0.001089	0.001155	0.058 693	0.068 424	0.076 776	0.084 494	0.099 088	0.113 15	0.126 94	0.140 54
35.00	h	212.26	421.62	634.03	853.17	2828.1	2979.0	3106.5	3224.2	3450.6	3676.9	3907.2	4142.4
(242.5)	s	0.70188	1.30421	1.83828	2.32759	6.1732	6.4491	6.6626	6.8443	7.1580	7.4332	7.6828	7.9128
	v	0.00101	0.001042	0.001088	0.001154	0.001251	0.058 833	0.066 446	0.073 376	0.086 341	0.098 763	0.110 90	0.122 85
40.00	h	212.69	421.99	634.34	853.37	1085.78	2962.0	3095.1	3215.7	3445.0	3672.8	3904.1	4140.0
(250.3)	s	0.70165	1.30382	1.83773	2.32681	2.79343	6.3642	6.5870	6.7733	7.0909	7.3680	7.6187	7.8495
	v	0.00101	0.001041	0.001088	0.001154	0.00125	0.051 336	0.058 696	0.064 721	0.076 427	0.087 570	0.098 425	0.109 10
45.00	h	213.12	422.37	634.65	853.58	1085.77	2944.2	3083.3	3207.1	3439.3	3668.6	3901.0	4137.7
(257.4)	s	0.70142	1.30343	1.83718	2.32603	2.79221	6.2852	6.5182	6.7093	7.0311	7.3100	7.5619	7.7934

	PROPRIETÀ TERMODINAMICHE DELL'ACQUA - VAPORE Volume specifico v, m^3/kg; Entalpia h, kJ/kg; Entropia s, kJ/kg K	TAB. 3B

Pressione bar (temp. Sat.°C)		50	100	150	200	250	300	350	400	500	600	700	800
	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
50.00	h	213.55	422.74	634.96	853.79	1085.76	29255	3071.2	3198.3	3433.7	3664.5	3897.9	4135.3
(263.9)	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
	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
60.00	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
(275.6)	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
	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
70.00	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
(285.8)	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
	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
80.00	h	216.12	425	636.84	855.06	1085.77	2786.8	2989.9	3141.6	3398.8	3639.5	3879.2	4121.5
(295.0)	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
	v	0.001008	0.001039	0.001085	0.001149	0.001245	0.001402	0.025 792	0.029 29	0.036 737	0.042 798	0.048 534	0.054 080
90.00	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
(303.3)	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
	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
100.00	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
(311.0)	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
	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
125.00	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
(327.8)	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
	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
150.00	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
(342.1)	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
	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
175.00	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
(354.6)	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
	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
200.00	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
(365.7)	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
	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
300.00	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
	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
400.00	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
	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
500.00	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
	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
600.00	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
	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
700.00	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
	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
800.00	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
	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
900.00	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
	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
1000.00	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

	PROPRIETÀ TERMODINAMICHE DEL REFRIGERANTE R134A ALLA SATURAZIONE	TAB. 4A

Temp.	Press.	Volume Specifico m^3/kg		Energia interna kJ/kg		Entalpia kJ/kg			Entropia kJ/kg K		Temp.
°C	bar	liquido saturo $v_l \times 10^3$	vapore saturo v_v	liquido saturo u_l	vapore saturo u_v	liquido saturo h_l	vap. Δh_{lv}	vapore saturo h_v	liquido saturo s_l	vapore saturo s_v	°C
-40	0.5164	0.7055	0.3569	49.94	254.43	49.98	222.88	272.86	0.8030	1.759	-40
-36	0.6332	0.7113	0.2947	54.66	256.71	54.71	220.67	275.38	0.8231	1.7536	-36
-32	0.7704	0.7172	0.2451	59.45	258.99	59.50	218.37	277.88	0.8431	1.7486	-32
-28	0.9305	0.7233	0.2052	64.29	261.27	64.35	216.01	280.36	0.8630	1.7441	-28
-26	1.0199	0.7265	0.1882	66.73	262.41	66.80	214.80	281.60	0.8729	1.7420	-26
-24	1.1160	0.7296	0.1728	69.19	263.55	69.27	213.57	282.83	0.8828	1.7400	-24
-22	1.2192	0.7328	0.1590	71.66	264.68	71.75	212.32	284.06	0.8927	1.7381	-22
-20	1.3299	0.7361	0.1464	74.15	265.82	74.24	211.05	285.29	0.9026	1.7362	-20
-18	1.4483	0.7395	0.1350	76.65	266.95	76.75	209.76	286.51	0.9124	1.7345	-18
-16	1.5748	0.7428	0.1247	79.16	268.08	79.28	208.45	287.72	0.9222	1.7328	-16
-12	1.8540	0.7498	0.1068	84.23	270.34	84.37	205.77	290.13	0.9418	1.7297	-12
-8	2.1704	0.7569	0.0919	89.36	272.58	89.52	203.00	292.52	0.9613	1.7269	-8
-4	2.5274	0.7644	0.0794	94.54	274.82	94.73	200.15	294.88	0.9807	1.7243	-4
0	2.9282	0.7210	0.0689	99.77	277.04	100.00	197.21	297.21	1.0000	1.7220	0
4	3.3765	0.7801	0.0600	105.06	279.25	105.33	194.19	299.51	1.0192	1.7199	4
8	3.8756	0.7884	0.0525	110.41	281.44	110.71	191.07	301.78	1.0384	1.7180	8
12	4.4294	0.7971	0.0460	115.81	283.61	116.16	187.85	304.01	1.0575	1.7162	12
16	5.0416	0.8062	0.0405	121.27	285.76	121.67	184.52	306.20	1.0765	1.7146	16
20	5.7160	0.8157	0.0358	126.78	287.89	127.24	181.09	308.34	1.0954	1.7132	20
24	6.4566	0.8257	0.0317	132.35	289.99	132.88	177.55	310.43	1.1143	1.7119	24
26	6.8530	0.8309	0.0298	135.16	291.03	135.73	175.73	311.46	1.1238	1.7112	26
28	7.2675	0.8362	0.0281	137.98	292.06	138.59	173.89	312.48	1.1332	1.7106	28
30	7.7006	0.8417	0.0265	140.82	293.08	141.47	172.00	313.48	1.1426	1.7100	30
32	8.1528	0.8473	0.0250	143.68	294.10	144.37	170.09	314.46	1.1520	1.7094	32
34	8.6247	0.8530	0.0236	146.56	295.10	147.29	168.14	315.43	1.1614	1.7088	34
36	9.1168	0.8590	0.0223	149.45	296.09	150.23	166.15	316.38	1.1708	1.7083	36
38	9.6298	0.8651	0.0210	152.36	297.07	153.19	164.12	317.31	1.1802	1.7077	38
40	10.164	0.8714	0.0199	155.28	298.04	156.17	162.05	318.22	1.1896	1.7071	40
42	10.720	0.8780	0.0188	158.23	299.00	159.17	159.94	319.12	1.1990	1.7065	42
44	11.299	0.8847	0.0177	161.20	299.94	162.20	157.79	319.99	1.2084	1.7060	44
48	12.526	0.8989	0.0159	167.20	301.77	168.33	153.33	321.66	1.2273	1.7047	48
52	13.851	0.9142	0.0142	173.29	303.53	174.56	148.66	323.22	1.2462	1.7034	52
56	15.278	0.9308	0.0127	179.49	305.21	180.91	143.75	324.66	1.2652	1.7020	56
60	16.813	0.9488	0.0114	185.80	306.79	187.40	138.57	325.97	1.2844	1.7003	60
70	21.162	1.0027	0.0086	206.20	310.13	204.32	124.08	328.41	1.3332	1.6948	70
80	26.324	1.0766	0.0064	219.86	312.12	222.69	106.41	329.10	1.3844	1.6857	80
90	32.435	1.1949	0.0046	239.8	311.32	243.67	82.63	326.30	1.4410	1.6685	90
100	39.742	1.5443	0.0027	268.58	298.47	274.72	34.40	309.11	1.5226	1.6147	100

	PROPRIETÀ TERMODINAMICHE DEL REFRIGERANTE R134A ALLA SATURAZIONE	TAB. 4B

Press.	Temp.	Volume Specifico m^3/kg		Energia interna kJ/kg		Entalpia kJ/kg			Entropia kJ/kg K		Press.
bar	°C	liquido saturo $v_l \times 10^3$	vapore saturo v_v	liquido saturo u_l	vapore saturo u_v	liquido saturo h_l	vap. Δh_{lv}	vapore saturo h_v	liquido saturo s_l	vapore saturo s_v	bar
0.6	-37.07	0.7097	0.3100	53.39	256.10	53.44	221.27	274.70	0.8177	1.755	0.6
0.8	-31.21	0.7184	0.2366	60.39	259.44	60.45	217.92	278.37	0.8470	1.7477	0.8
1.0	-26.43	0.7258	0.1917	66.20	262.16	66.27	215.06	281.33	0.8708	1.7425	1.0
1.2	-22.36	0.7323	0.1614	71.21	264.48	71.30	212.54	283.84	0.8909	1.7384	1.2
1.4	-18.80	0.7381	0.1395	75.64	266.50	75.75	210.27	286.02	0.9085	1.7352	1.4
1.6	-15.62	0.7435	0.1229	79.64	268.30	79.76	208.19	287.95	0.9241	1.7325	1.6
1.8	-12.73	0.7485	0.1098	83.29	269.92	83.43	206.26	289.69	0.9382	1.7303	1.8
2.0	-10.09	0.7532	0.0993	86.67	271.41	86.82	204.46	291.28	0.9511	1.7283	2.0
2.4	-5.37	0.7618	0.0834	92.75	274.05	92.93	201.14	294.07	0.9740	1.7252	2.4
2.8	-1.23	0.7697	0.0719	98.16	276.36	98.37	198.13	296.5	0.9941	1.7227	2.8
3.2	2.48	0.7770	0.0632	103.04	278.41	103.29	195.35	298.64	1.0119	1.7207	3.2
3.6	5.84	0.7839	0.0564	107.52	280.26	107.80	192.76	300.56	1.0281	1.7190	3.6
4.0	8.93	0.7904	0.0509	111.67	281.95	111.98	190.32	302.30	1.0429	1.7175	4.0
5.0	15.74	0.8056	0.0409	120.91	285.62	121.31	184.74	306.05	1.0753	1.7147	5.0
6.0	21.58	0.8196	0.0341	128.97	288.72	129.46	179.71	309.17	1.1029	1.7127	6.0
7.0	26.72	0.8328	0.0292	136.17	291.4	136.76	175.07	311.83	1.1272	1.7110	7.0
8.0	31.33	0.8454	0.0255	142.73	293.76	143.40	170.73	314.13	1.1489	1.7096	8.0
9.0	35.53	0.8576	0.0226	148.77	295.86	149.54	166.62	316.16	1.1686	1.7084	9.0
10.0	39.39	0.8695	0.0202	154.4	297.75	155.27	162.68	317.95	1.1868	1.7073	10.0
12.0	46.32	0.8928	0.0166	164.67	301.01	165.21	155.23	320.97	1.2194	1.7053	12.0
14.0	52.43	0.9159	0.0140	173.96	303.72	175.24	148.14	323.38	1.2483	1.7033	14.0
16.0	57.92	0.9392	0.0121	182.5	305.98	184.00	141.31	325.31	1.2744	1.7012	16.0
18.0	62.91	0.9631	0.0105	190.47	307.86	192.20	134.60	326.81	1.2984	1.6989	18.0
20.0	67.49	0.9878	0.0093	198	309.39	199.97	127.95	327.92	1.3208	1.6964	20.0
25.0	77.59	1.0562	0.0069	215.46	311.82	218.10	111.06	329.15	1.3717	1.6884	25.0
30.0	86.22	1.1416	0.0053	231.86	312.14	235.28	92.71	327.99	1.4186	1.6765	30.0

	DIAGRAMMA PRESSIONE – ENTALPIA PER IL REFRIGERANTE R134A	DIAGR.5

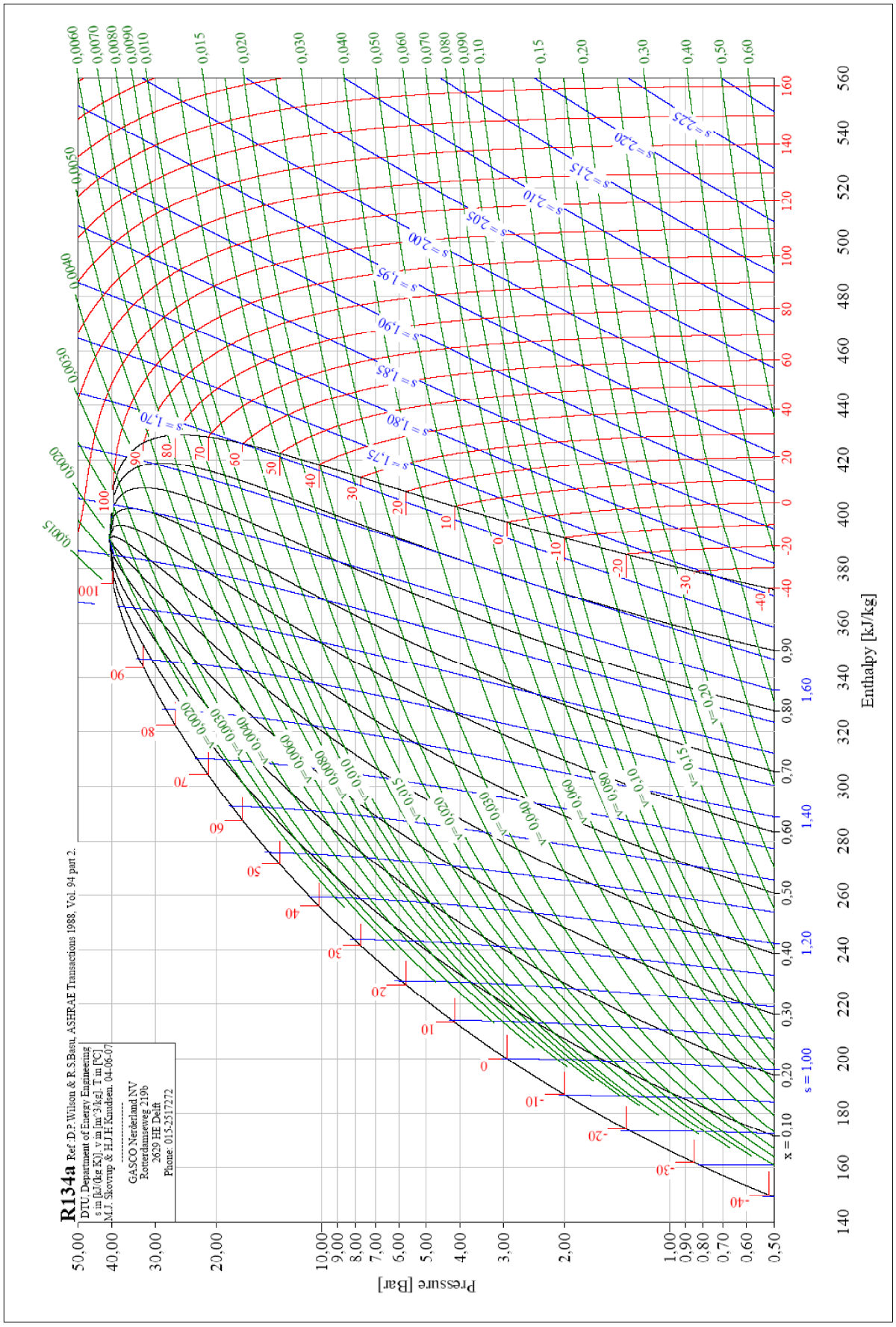
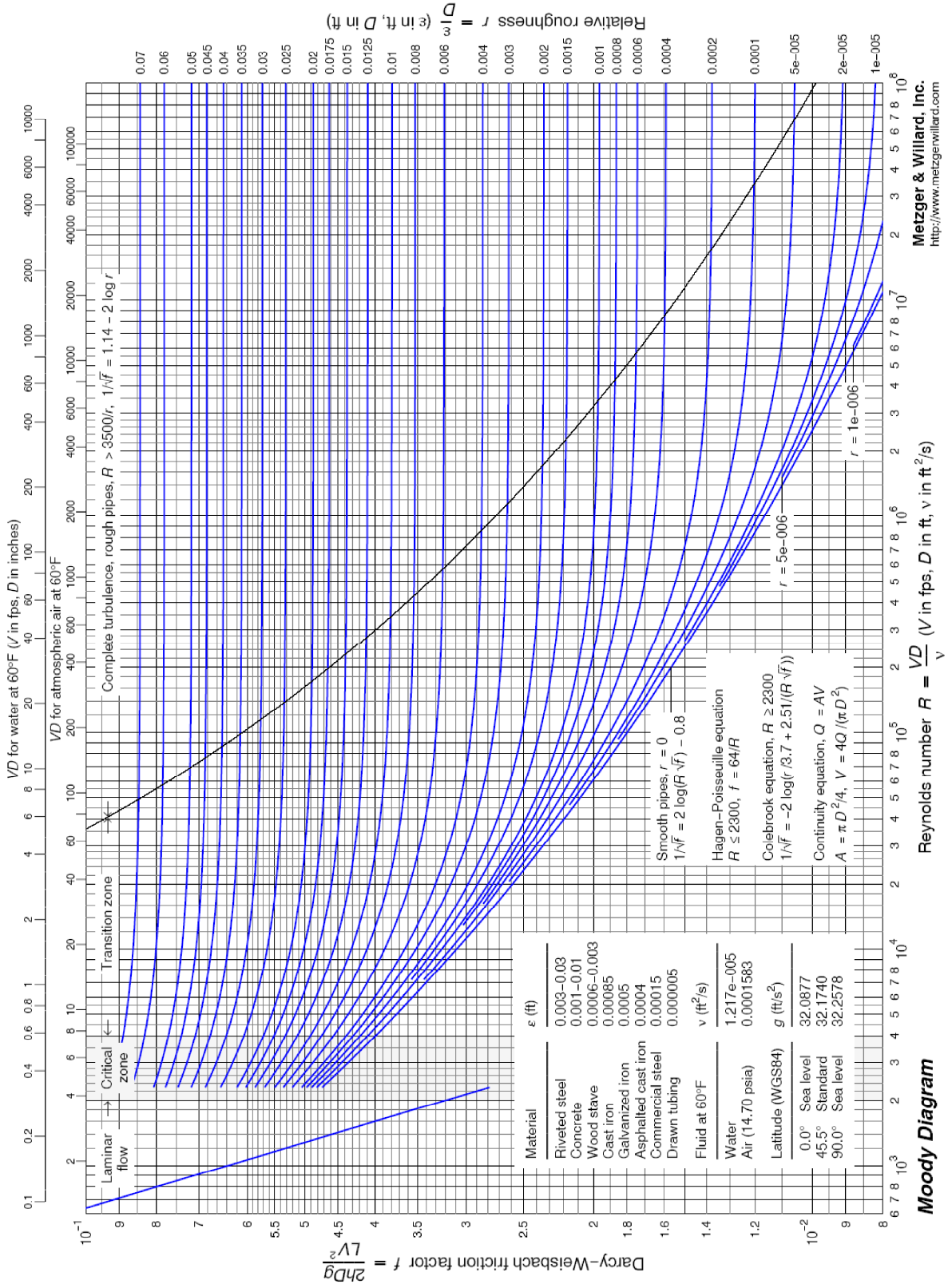


	DIAGRAMMA DI MOODY	DIAGR. 6A



Proprietà di alcuni combustibili gassosi in condizioni normali (p = 1,01325 bar; t = 0°C)

	ρ/ρ_A	*PCS* MJ/m³	*PCI* MJ/m³	V_A/V
Idrogeno	0,0696	12,1	10,2	2,38
Metano	0,554	37,7	33,9	9,52
Propano commerciale	1,52	93,9	86,4	23,7
Butano commerciale	1,94	118	109	29,9

Simboli:

ρ_A	densità dell'aria (1,29 kg/m³)
PCS	potere calorifico superiore
PCI	potere calorifico inferiore
V_A/V	volume d'aria necessario per la completa combustione di un volume unitario del gas combustibile

Nel caso di combustibili costituiti da miscele di diverse sostanze pure i valori esposti sono solo indicativi e possono subire variazioni secondo la composizione della miscela.

Proprietà di alcuni combustibili liquidi in condizioni ordinarie.

	ρ kg/m³	*PCS* MJ/kg	*PCI* MJ/kg
Propano commerciale	505	50,0	46,3
Butano commerciale	575	49,3	45,8
Benzina	733	46,9	43,7
Kerosene	780	46,5	43,4
Olio combustibile	840	45,4	42,4

Simboli:

PCS	potere calorifico superiore
PCI	potere calorifico inferiore

Per questi liquidi, che sono costituiti da miscele di diverse sostanze, i valori esposti sono solo indicativi.

Equivalenze tra unità di misura della pressione

	Pa	bar	kg_f/cm^2	mmHg	mmH_2O	atm
1 Pa =	1	10^{-5}	$1{,}019\,72\times10^{-5}$	$7{,}500\,64\times10^{-3}$	0,101 972	$9{,}8692\times10^{-6}$
1 bar =	10^5	1	1,019 72	750,062	10 197,2	0,986 92
1 kg_f/cm^2 =	98 066,5	0,980 665	1	735,561	10^4	0,967 841
1 mmHg =	133,322	$1{,}333\,22\times10^{-3}$	$1{,}359\,5\times10^{-3}$	1	13,595 10	$1{,}315\,789\times10^{-3}$
1 mmH_2O =	9,806 65	$9{,}807\times10^{-5}$	10^{-4}	0,073 555 6	1	$9{,}678\,41\times10^{-5}$
1 atm =	101 325	1,013 25	1,033 227	760	10 332,27	1

EQUIVALENZE TRA UNITÀ DI MISURA

Si danno qui le equivalenze delle più comuni unità di misura del sistema tecnico, del sistema inglese e di altre unità a quelle del sistema SI. Le equivalenze sono date in generale con cinque cifre significative; i valori esatti sono segnalati con un asterisco.

Accelerazione
1 $cm/s^2 = 1 \times 10^{-2}$ m/s^2 (*)
1 $ft/s^2 = 3{,}048 \times 10^{-1}$ m/s^2 (*)

Area
1 ft^2 = 1 sq.ft = $9{,}2903 \times 10^{-2}$ m^2
1 in^2 = 1 sq.in = $6{,}4516 \times 10^{-4}$ m^2 (*)
1 yd^2 = 1 sq.yd = $8{,}3613 \times 10^{-1}$ m^2
1 a = 1×10^{-2} m^2 (*)
1 ca = 1 m^2 (*)
1 ha = 1×10^4 (*)
1 acre = $4{,}0469 \times 10^3$ m^2
1 mi^2 = $2{,}5900 \times 10^6$ m^2

Calore specifico
1 cal/g °C = $4{,}1868 \times 10^3$ J/kg K
1 Btu/lb °F = $4{,}1868 \times 10^3$ J/kg K

Conduttività termica
1 kcal/h m °C = 1,1630 W/°C m
1 Btu/h ft °F = 1,7308 W/°C m

Densità di massa
1 $g/cm^3 = 1 \times 10^3$ kg/m^3 (*)
1 $lb/ft^3 = 1{,}6018 \times 10$ kg/m^3
1 $kg/ft^3 = 3{,}5315 \times 10$ kg/m^3

Energia, lavoro, calore, entalpia...
1 cal = 4,1868 J
1 kcal = $4{,}1868 \times 10^3$ J
1 Frig = $4{,}1868 \times 10^3$ J
1 Btu = $1{,}0551 \times 10^3$ J
1 erg = 1×10^{-7} J (*)
1 CV h = $2{,}6477 \times 10^6$ J
1 HP h = $2{,}6845 \times 10^6$ J
1 kW h = $3{,}6 \times 10^6$ J (*)
1 ft pdl = $4{,}2139 \times 10^{-2}$ J
1 ft lb_f = 1,3558 J

Energia specifica, etc.
1 cal/g = $4{,}1868 \times 10^3$ J/kg
1 Btu/lb = $2{,}3260 \times 10^3$ J/kg

Flusso luminoso
1 candela media sferica = 12,566 lm
1 Btu/h ft^2 = 3,1547 W/m^2

Flusso termico specifico
1 kcal/h m^2 = 1,1630 W/m^2
1 Btu/h ft^2 = 3,1547 W/m^2

Forza
1 kg_f = 9,8067 N
1 dyn = 1×10^{-5} N (*)
1 pdl (poundal) = $1{,}3825 \times 10^{-1}$ N
1 lb_f = 4,4482 N

Illuminamento
1 footcandle = 1 fc = 10,764 lx
1 phot = 1×10^4 lx

Luminanza
1 stilb = 1×10^4 cd/m^2 (*)
1 lambert ([1]) = $3{,}1831 \times 10^3$ cd/m^2
1 footlambert = 1 fL = 3,426 cd/m^2

Lunghezza
1 ft (piede) = $3{,}048 \times 10^{-1}$ m (*)
1 Å (Ångström) = 1×10^{-10} m (*)
1 in (pollice) = $2{,}54 \times 10^{-2}$ m (*)
1 yd (iarda) = $9{,}144 \times 10^{-1}$ m (*)
1 mi (miglio) = $1{,}6093 \times 10^3$ m

Massa
1 lb (libbra) = $4{,}5359 \times 10^{-1}$ kg
1 ton = $1{,}0160 \times 10^3$ kg
1 oz (oncia) = $2{,}8350 \times 10^{-2}$ kg
1 gr (grano) = $6{,}4800 \times 10^{-5}$ kg

Portata di massa
1 kg/h = $2{,}7778 \times 10^{-4}$ kg/s
1 lb/s = $4{,}5349 \times 10^{-1}$ kg/s

([1]) Il simbolo del lambert, unità estranea al sistema SI, è uguale al simbolo L del litro.

	DIAGRAMMA PSICROMETRICO A QUOTA 0 M (P RIF 101.325 KPA)	DIAGR. 9A

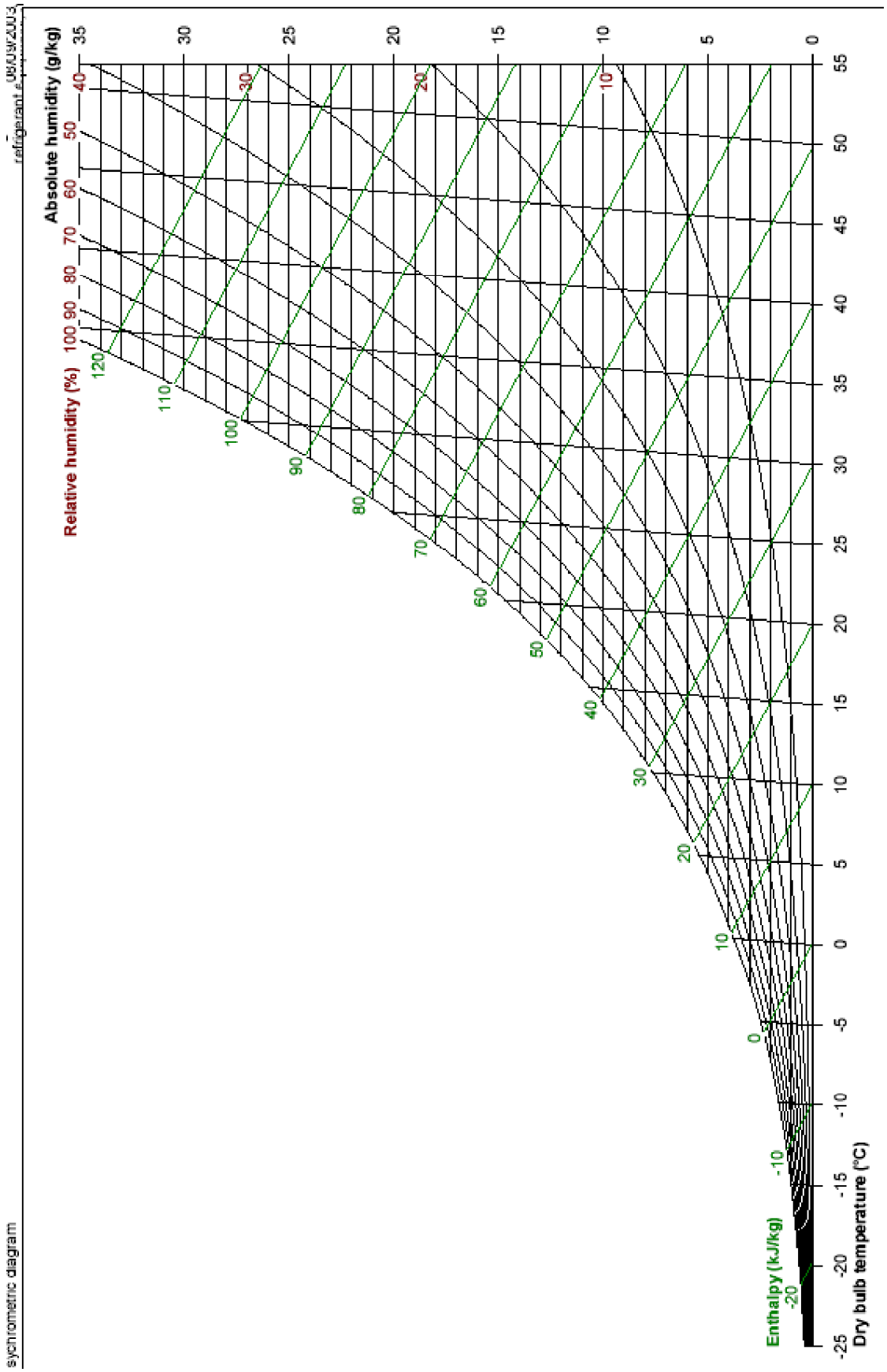
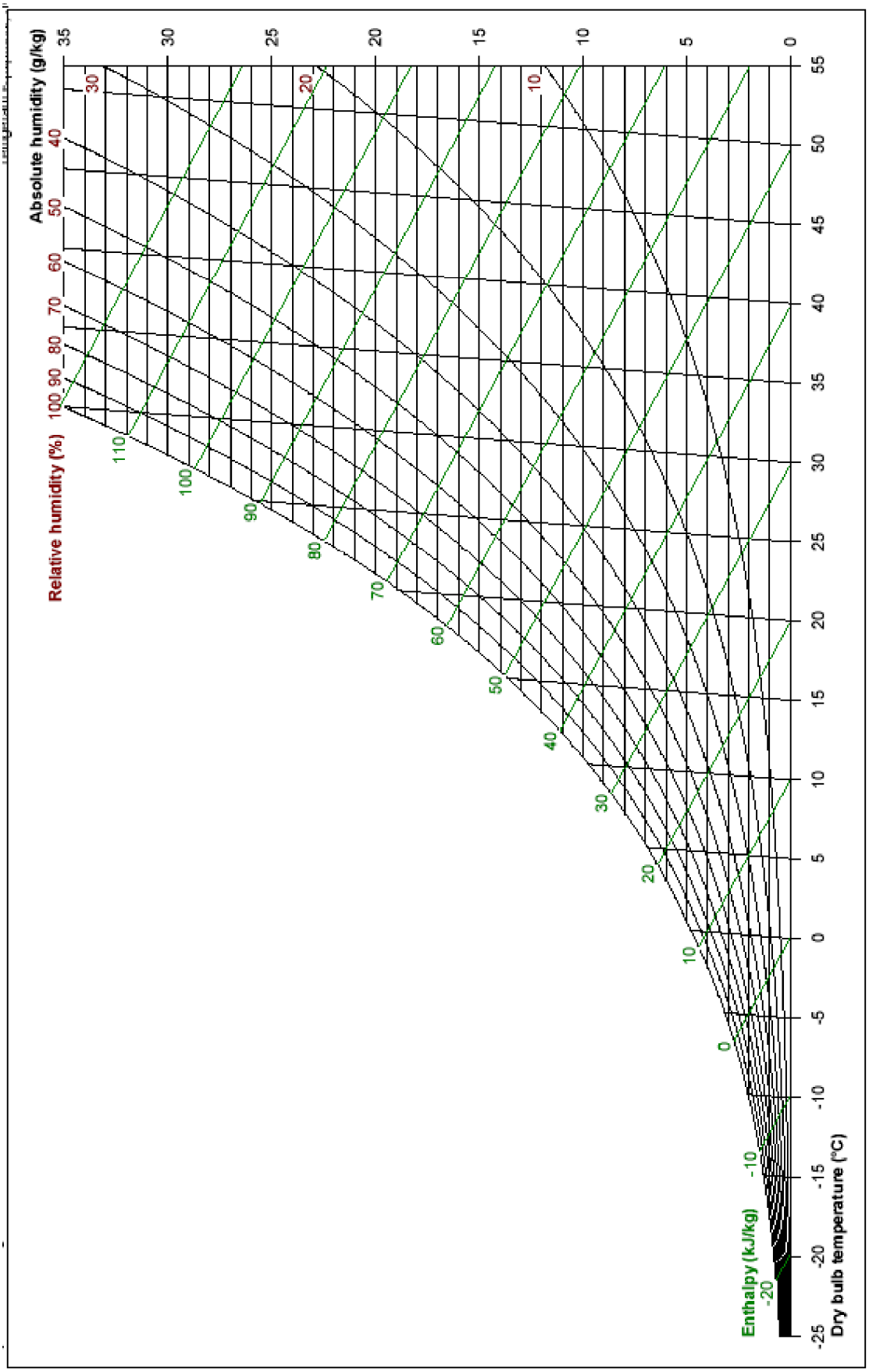


	DIAGRAMMA PSICROMETRICO A QUOTA 2000 M	DIAGR. 9B



	PROPRIETÀ TERMOFISICHE DELL'ARIA (p = 1 bar)	TAB. 10

T Temperatura
ρ Densità
c_p Calore specifico a p=cost
β Coefficiente volumetrico di dilatazione termica, $\beta=(1/v)\,(\delta v/\delta T)_p$
k Conducibilità termica
μ Viscosità dinamica
ν Viscosità cinematica
a Diffusività termica
Pr Numero di Prandtl

T °C	ρ kg/m³	c_p kJ/kg K	β x 10³ 1/K	k x 10³ W/mK	μ x 10⁶ kg/sm	ν x 10⁷ m²/s	a x 10⁷ m²/s	Pr
-200	5.106	1.186	17.24	6.886	4.997	9.786	11.37	0.8606
-180	3.851	1.071	11.83	8.775	6.623	17.20	21.27	0.8086
-160	3.126	1.036	9.293	10.64	7.994	25.58	32.86	0.7784
-140	2.639	1.010	7.726	12.47	9.294	35.22	46.77	0.7530
-120	2.287	1.014	6.657	14.26	10.55	46.14	61.50	0.7502
-100	2.019	1.011	5.852	16.02	11.77	58.29	78.51	0.7423
-80	1.807	1.009	5.227	17.74	12.94	71.59	97.30	0.7357
-60	1.636	1.007	4.725	19.41	14.07	85.98	117.8	0.7301
-40	1.495	1.007	4.313	21.04	15.16	101.4	139.7	0.7258
-30	1.433	1.007	4.133	21.84	15.70	109.5	151.3	0.7236
-20	1.377	1.007	3.968	22.63	16.22	117.8	163.3	0.7215
-10	1.324	1.006	3.815	23.41	16.74	126.4	175.7	0.7196
0	1.275	1.006	3.674	24.18	17.24	135.2	188.3	0.7179
10	1.230	1.007	3.543	24.94	17.74	144.2	201.4	0.7163
20	1.188	1.007	3.421	25.69	18.24	153.5	214.7	0.7148
30	1.149	1.007	3.307	26.43	18.72	163.0	228.4	0.7134
40	1.112	1.007	3.200	27.16	19.20	172.6	242.4	0.7122
60	1.045	1.009	3.007	28.60	20.14	192.7	271.3	0.7100
80	0.9859	1.010	2.836	30.01	21.05	213.5	301.4	0.7083
100	0.9329	1.012	2.683	31.39	21.94	235.1	332.6	0.7070
120	0.8854	1.014	2.546	32.75	22.80	257.5	364.8	0.7060
140	0.8425	1.016	2.422	34.08	23.65	280.7	398.0	0.7054
160	0.8036	1.019	2.310	35.39	24.48	304.6	432.1	0.7050
180	0.7681	1.022	2.208	36.68	25.29	329.3	467.1	0.7049
200	0.7356	1.026	2.115	37.95	26.09	354.7	503.0	0.7051
250	0.6653	1.035	1.912	41.06	28.02	421.1	596.2	0.7063
300	0.6072	1.046	1.745	44.09	29.86	491.8	694.3	0.7083
350	0.5585	1.057	1.605	47.05	31.64	566.5	796.8	0.7109
400	0.5170	1.069	1.486	49.96	33.35	645.1	903.8	0.7137
450	0.4813	1.081	1.383	52.82	35.01	727.4	1015	0.7166
500	0.4502	1.093	1.293	55.64	36.62	803.5	1131	0.7194
550	0.4228	1.105	1.215	58.41	38.19	903.1	1251	0.7221
600	0.3986	1.116	1.145	61.14	39.71	996.3	1375	0.7247
650	0.3770	1.126	1.083	63.83	41.20	1093	1503	0.7271
700	0.3576	1.137	1.027	66.46	42.66	1193	1635	0.7295
750	0.3402	1.146	0.9772	69.03	44.08	1296	1771	0.7318
800	0.3243	1.155	0.9317	71.54	45.48	1402	1910	0.7342
850	0.3099	1.163	0.8902	73.98	46.85	1512	2052	0.7368
900	0.2967	1.171	0.8523	76.33	48.19	1624	2197	0.7395
1000	0.2734	1.185	0.7853	80.77	50.82	1859	2492	0.7458

	PROPRIETÀ TERMOFISICHE DELL'ACQUA ALLA SATURAZIONE	TAB. 11

T Temperatura
c Calore specifico a p=cost
β Coefficiente volumetrico di dilatazione termica
k Conducibilità termica
μ Viscosità dinamica
ν Viscosità cinematica
a Diffusività termica
Pr Numero di Prandtl
σ Tensione superficiale

PEDICI:
l liquido saturo
v vapore saturo secco

T	c_{pl}	c_{pv}	β_l	β_v	k_l	k_v	μ_l	μ_v	ν_l	ν_v	a_l	a_v	Pr_l	Pr_v	σ
°C	kJ/kgK		10^{-3} 1/K		10^{-3} W/mK		10^{-6} kg/m s		10^{-6} m^2/s		10^{-6} m^2/s				10^{-3} N/m
0.01	4.229	1.868	-0.08044	3.672	561.0	17.07	1792	9.216	1.792	1898	0.1327	1883	13.51	1.008	75.65
10.00	4.188	1.874	0.08720	3.548	580.0	17.62	1306	9.461	1.307	1006	0.1385	999.8	9.434	1.006	74.22
20.00	4.183	1.882	0.2089	3.435	598.4	18.23	1002	9.727	1.004	562.0	0.1433	559.6	7.005	1.004	72.74
30.00	4.183	1.892	0.3050	3.332	615.4	18.89	797.7	10.01	0.8012	329.3	0.1478	328.3	5.422	1.003	71.20
40.00	4.182	1.904	0.3859	3.240	630.5	19.60	653.2	10.31	0.6584	201.3	0.1519	200.9	4.333	1.002	69.60
50.00	4.182	1.919	0.4572	3.156	643.5	20.36	547.1	10.62	0.5537	127.8	0.1558	127.7	3.555	1.001	67.95
60.00	4.183	1.937	0.5222	3.083	654.3	21.18	466.6	10.93	0.4746	83.91	0.1591	83.92	2.983	1.000	66.24
70.00	4.187	1.958	0.5827	3.018	666.3	22.07	404.1	11.26	0.4132	56.80	0.1620	56.85	2.551	0.9992	64.49
80.00	4.194	1.983	0.6403	2.964	670.0	23.01	354.5	11.59	0.3648	39.51	0.1644	39.56	2.219	0.9989	62.68
90.00	4.204	2.011	0.6958	2.919	675.3	24.02	314.5	11.93	0.3258	28.17	0.1664	28.20	1.958	0.9989	60.82
100.00	4.217	2.044	0.7501	2.884	679.1	25.09	281.9	12.27	0.2941	20.53	0.1680	20.55	1.750	0.9994	58.92
110.00	4.232	2.082	0.8038	2.860	681.7	26.24	254.8	12.61	0.2680	15.27	0.1694	15.26	1.582	1.001	56.97
120.00	4.249	2.126	0.8576	2.846	683.2	27.46	232.2	12.96	0.2462	11.56	0.1705	11.53	1.444	1.003	54.97
130.00	4.267	2.176	0.9123	2.844	683.7	28.76	213.0	13.30	0.2278	8.894	0.1714	8.840	1.329	1.006	52.94
140.00	4.288	2.233	0.9683	2.855	683.3	30.14	196.6	13.65	0.2123	6.946	0.1720	6.869	1.234	1.011	50.86
150.00	4.312	2.299	1.026	2.878	682.1	31.59	182.5	13.99	0.1991	5.496	0.1725	5.399	1.154	1.018	48.75
160.00	4.339	2.374	1.087	2.916	680.0	33.12	170.3	14.34	0.1877	4.402	0.1727	4.285	1.087	1.027	46.60
170.00	4.369	2.460	1.152	2.969	677.1	34.74	159.6	14.68	0.1779	3.565	0.1727	3.430	1.030	1.039	44.41
180.00	4.403	2.558	1.221	3.039	673.4	36.44	150.2	15.02	0.1693	2.915	0.1724	2.764	0.9822	1.055	42.20
190.00	4.443	2.670	1.296	3.128	668.8	38.23	141.8	15.37	0.1619	2.405	0.1718	2.241	0.9423	1.073	39.95
200.00	4.489	2.797	1.377	3.238	663.4	40.10	134.4	15.71	0.1554	2.001	0.1709	1.825	0.9093	1.096	37.68
210.00	4.542	2.943	1.467	3.372	657.1	42.07	127.7	16.06	0.1497	1.676	0.1696	1.492	0.8825	1.123	35.39
220.00	4.604	3.109	1.567	3.534	649.8	44.15	121.6	16.41	0.1447	1.414	0.1680	1.224	0.8614	1.155	33.08
230.00	4.675	3.299	1.680	3.729	641.4	46.35	116.0	16.76	0.1403	1.199	0.1659	1.005	0.8456	1.193	30.75
240.00	4.759	3.519	1.808	3.963	632.0	48.70	110.9	17.12	0.1363	1.023	0.1633	0.8268	0.8351	1.237	28.40
250.00	4.857	3.772	1.955	4.245	621.4	51.23	106.2	17.49	0.1329	0.8766	0.1601	0.6804	0.8299	1.288	26.05
260.00	4.973	4.068	2.127	4.586	609.4	53.98	101.7	17.88	0.1298	0.7542	0.1564	0.5598	0.8302	1.347	23.70
270.00	5.111	4.418	2.331	5.002	596.1	57.04	97.56	18.27	0.1271	0.6512	0.1519	0.4602	0.8365	1.415	21.35
280.00	5.279	4.836	2.578	5.519	581.4	60.52	93.57	18.70	0.1247	0.5640	0.1467	0.3775	0.8496	1.494	19.00
290.00	5.485	5.345	2.884	6.170	565.2	64.59	89.72	19.15	0.1225	0.4896	0.1407	0.3089	0.8708	1.585	16.68
300.00	5.746	5.981	3.273	7.010	547.7	69.49	85.96	19.65	0.1207	0.4257	0.1338	0.2517	0.9018	1.691	14.37
310.00	6.084	6.799	3.785	8.127	529.0	75.61	82.22	20.20	0.1190	0.3706	0.1258	0.2040	0.9457	1.817	12.10
320.00	6.542	7.898	4.491	9.674	509.4	83.59	78.46	20.84	0.1176	0.3226	0.1167	0.1638	1.008	1.969	9.875
330.00	7.201	9.458	5.530	11.94	489.2	94.48	74.58	21.60	0.1163	0.2805	0.1060	0.1297	1.098	2.163	7.713
340.00	8.238	11.87	7.210	15.55	468.6	110.2	70.45	22.55	0.1153	0.2433	0.09313	0.1002	1.239	2.428	5.636
350.00	10.13	16.11	10.37	22.12	447.6	134.6	65.88	23.81	0.1146	0.2098	0.07692	0.07365	1.490	2.849	3.675
360.00	14.69	25.80	18.30	37.71	427.2	178.0	60.39	25.71	0.1144	0.1790	0.05507	0.04804	2.077	3.726	1.886
370.00	41.96	78.75	68.20	126.7	428.0	299.4	52.26	29.57	0.1153	0.1477	0.02251	0.01898	5.122	7.780	0.3948
373.00	∞	∞	∞	∞	1419	1419	43.16	43.16	0.1341	0.1341	0.00000	0.00000	∞	∞	0.0000

λT (μm-K)	$E_b(0 \rightarrow \lambda T)/\sigma T^4$	λT (μm-K)	$E_b(0 \rightarrow \lambda T)/\sigma T^4$	λT (μm-K)	$E_b(0 \rightarrow \lambda T)/\sigma T^4$
555.6	1.70E–08	4000.0	0.48085	7444.4	0.83166
666.7	7.56E–07	4111.1	0.50066	7555.6	0.83698
777.8	1.06E–05	4222.2	0.51974	7666.7	0.84209
888.9	7.38E–05	4333.3	0.53809	7777.8	0.84699
1000.0	3.21E–04	4444.4	0.55573	7888.9	0.85171
1111.1	0.00101	4555.6	0.57267	8000.0	0.85624
1222.2	0.00252	4666.7	0.58891	8111.1	0.86059
1333.3	0.00531	4777.8	0.60449	8222.2	0.86477
1444.4	0.00983	4888.9	0.61941	8333.3	0.86880
1555.6	0.01643	5000.0	0.63371	8888.9	0.88677
1666.7	0.02537	5111.1	0.64740	9444.4	0.90168
1777.8	0.03677	5222.2	0.66051	10000.0	0.91414
1888.9	0.05059	5333.3	0.67305	10555.6	0.92462
2000.0	0.06672	5444.4	0.68506	11111.1	0.93349
2111.1	0.08496	5555.6	0.69655	11666.7	0.94104
2222.2	0.10503	5666.7	0.70754	12222.2	0.94751
2333.3	0.12665	5777.8	0.71806	12777.8	0.95307
2444.4	0.14953	5888.9	0.72813	13333.3	0.95788
2555.5	0.17337	6000.0	0.73777	13888.9	0.96207
2666.7	0.19789	6111.1	0.74700	14444.4	0.96572
2777.8	0.22285	6222.1	0.75583	15000.0	0.96892
2888.9	0.24803	6333.3	0.76429	15555.6	0.97174
3000.0	0.27322	6444.4	0.77238	16111.1	0.97423
3111.1	0.29825	6555.6	0.78014	16666.7	0.97644
3222.2	0.32300	6666.7	0.78757	22222.2	0.98915
3333.3	0.34734	6777.8	0.79469	22777.8	0.99414
3444.4	0.37118	6888.9	0.80152	33333.3	0.99649
3555.6	0.39445	7000.0	0.80806	33888.9	0.99773
3666.7	0.41708	7111.1	0.81433	44444.4	0.99845
3777.8	0.43905	7222.2	0.82035	50000.0	0.99889
3888.9	0.46031	7333.3	0.82612	55555.6	0.99918

	RADIAZIONE SOLARE: FRAZIONE IRRADIATA A TERRA (AM=1.5) NELL'INTERVALLO (0-λT)	TAB. 13

Wavelength λ μm	$F_{0-\lambda}$	Wavelength λ μm	$F_{0-\lambda}$	Wavelength λ μm	$F_{0-\lambda}$
0.3050	0.0001	0.7400	0.5198	1.5200	0.8952
0.3100	0.0002	0.7525	0.5348	1.5390	0.9003
0.3150	0.0006	0.7575	0.5407	1.5580	0.9056
0.3200	0.0013	0.7625	0.5453	1.5780	0.9108
0.3250	0.0024	0.7675	0.5495	1.5920	0.9142
0.3300	0.0040	0.7800	0.5630	1.6100	0.9185
0.3350	0.0059	0.8000	0.5851	1.6300	0.9232
0.3400	0.0080	0.8160	0.6006	1.6460	0.9270
0.345	0.0102	0.8237	0.6069	1.6780	0.9343
0.3500	0.0125	0.8315	0.6135	1.7400	0.9465
0.3600	0.0175	0.8400	0.6215	1.8000	0.9525
0.3700	0.0234	0.8600	0.6409	1.8600	0.9535
0.3800	0.0303	0.8800	0.6600	1.9200	0.9536
0.3900	0.0575	0.9050	0.6810	1.9600	0.9541
0.4000	0.0462	0.9150	0.6881	1.9850	0.9555
0.4100	0.0570	0.9250	0.6949	2.0050	0.9567
0.4200	0.0687	0.9300	0.6976	2.0350	0.9586
0.4300	0.0800	0.9370	0.6999	2.0650	0.9609
0.4400	0.0919	0.9480	0.7031	2.1000	0.9636
0.4500	0.1060	0.9650	0.7102	2.1480	0.9677
0.4600	0.1217	0.9800	0.7190	2.1980	0.9715
0.4700	0.1376	0.9935	0.7284	2.2700	0.9766
0.4800	0.1536	1.0400	0.7618	2.3600	0.9826
0.4900	0.1694	1.0700	0.7817	2.4500	0.9863
0.5000	0.1849	1.1000	0.7975	2.4940	0.9872
0.5100	0.2006	1.1200	0.8027	2.5370	0.9877
0.5200	0.2159	1.1300	0.8042	2.9410	0.9892
0.5300	0.2312	1.1370	0.8053	2.9730	0.9894
0.5400	0.2468	1.1610	0.8110	3.0050	0.9896
0.5500	0.2624	1.1800	0.8186	3.0560	0.9899
0.5700	0.2930	1.2000	0.8274	3.1320	0.9902
0.5900	0.3220	1.2350	0.8432	31560	0.9905
0.6100	0.3508	1.2900	0.8678	3.2040	0.9910
0.6300	0.3800	1.3200	0.8777	3.2450	0.9911
0.6500	0.4085	1.3500	0.8820	3.3170	0.9917
0.6700	0.4366	1.3950	0.8828	3.3440	0.9919
0.6900	0.4619	1.4425	0.8841	34500	0.9928
0.7100	0.4863	1.4625	0.8857	3.5730	0.9943
0.7180	0.4956	1.4770	0.8872	3.7650	0.9964
0.7244	0.5022	1.4970	0.8901	4.045	0.9989