

*Temperature/pressure conversion table*  
*Tabella conversioni temperatura/pressione*

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-273	-459.4	-10	14	26	78.8	53	127.4	80	176.0	170	328	430	806	700	1292	970	1778	1750	3182
-270	-454	0	32	27	80.6	54	129.2	81	177.8	180	356	440	824	710	1310	980	1796	1800	3272
-260	-436	1	33.8	28	82.4	55	131.0	82	179.6	190	374	450	842	720	1328	990	1814	1850	3362
-250	-418	2	35.6	29	84.2	56	132.8	83	181.4	200	392	460	860	730	1346	1000	1832	1900	3452
-240	-400	3	37.4	30	86.0	57	134.6	84	183.2	210	410	470	878	740	1364	1020	1868	1950	3542
-230	-382	4	39.2	31	87.8	58	136.4	85	185.0	212	413.6	480	896	750	1382	1040	1904	2000	3632
-220	-364	5	41.0	32	89.6	59	138.2	86	186.8	220	428	490	914	760	1400	1060	1940	2050	3722
-210	-346	6	42.8	33	91.4	60	140.0	87	188.6	230	446	500	932	770	1418	1080	1976	2100	3812
-200	-328	7	44.6	34	93.2	61	141.8	88	190.4	240	464	510	950	780	1436	1100	2012	2150	3902
-190	-310	8	46.4	35	95.0	62	143.6	89	192.2	250	482	520	968	790	1454	1120	2048	2200	3992
-180	-292	9	48.2	36	96.8	63	145.4	90	194.0	260	500	530	986	800	1472	1140	2084	2250	4082
-170	-274	10	50.0	37	98.6	64	147.2	91	195.8	270	518	540	1004	810	1490	1160	2120	2300	4172
-160	-256	11	51.8	38	100.4	65	149.0	92	197.6	280	536	550	1022	820	1508	1180	2156	2350	4262
-150	-238	12	53.6	39	102.2	66	150.8	93	199.4	290	554	560	1040	830	1526	1200	2192	2400	4352
-140	-220	13	55.4	40	104.0	67	152.6	94	201.2	300	572	570	1058	840	1544	1220	2228	2450	4442
-130	-202	14	57.2	41	105.8	68	154.4	95	203.0	310	590	580	1076	850	1562	1240	2264	2500	4532
-120	-184	15	59.0	42	107.6	69	156.2	96	204.8	320	608	590	1094	860	1580	1260	2300	2550	4622
-110	-166	16	60.8	43	109.4	70	158.0	97	206.6	330	626	600	1112	870	1598	1280	2336	2600	4712
-100	-148	17	62.6	44	111.2	71	159.8	98	208.4	340	644	610	1130	880	1616	1300	2372	2650	4802
-90	-130	18	64.4	45	113.0	72	161.6	99	210.2	350	662	620	1148	890	1634	1350	2462	2700	4892
-80	-112	19	66.2	46	114.8	73	163.4	100	212.0	360	680	630	1166	900	1652	1400	2552	2750	4982
-70	-94	20	68.0	47	116.6	74	165.2	110	230	370	698	640	1184	910	1670	1450	2642	2800	5072
-60	-76	21	69.8	48	118.4	75	167.0	120	248	380	716	650	1202	920	1688	1500	2732	2850	5162
-50	-58	22	71.6	49	120.2	76	168.8	130	266	390	734	660	1220	930	1706	1550	2822	2900	5252
-40	-40	23	73.4	50	122.0	77	170.6	140	284	400	752	670	1238	940	1724	1600	2912	2950	5342
-30	-22	24	75.2	51	123.8	78	172.4	150	302	410	770	680	1256	950	1742	1650	3002	3000	5432
-20	-4	25	77.0	52	125.6	79	174.2	160	320	420	788	690	1274	960	1760	1700	3092		

1 - 40		41 - 80		81 - 200		205 - 500		510 - 900		910 - 1500	
psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
1	0.07	41	2.83	81	5.59	205	14.13	510	35.17	910	62.76
2	0.14	42	2.90	82	5.65	210	14.48	520	35.86	920	63.45
3	0.21	43	2.97	83	5.72	215	14.82	530	36.55	930	64.14
4	0.28	44	3.03	84	5.79	220	15.17	540	37.24	940	64.83
5	0.34	45	3.10	85	5.86	225	15.51	550	37.92	950	65.52
6	0.41	46	3.17	86	5.93	230	15.86	560	38.62	960	66.21
7	0.48	47	3.24	87	6.00	235	16.20	570	39.31	970	66.90
8	0.55	48	3.31	88	6.07	240	16.55	580	40.00	980	67.59
9	0.62	49	3.38	89	6.14	245	16.89	590	40.69	990	68.28
10	0.69	50	3.45	90	6.21	250	17.24	600	41.37	1000	68.95
11	0.76	51	3.52	91	6.27	255	17.58	610	42.07	1010	69.66
12	0.83	52	3.59	92	6.34	260	17.93	620	42.76	1020	70.34
13	0.90	53	3.65	93	6.41	265	18.27	630	43.45	1030	71.03
14	0.97	54	3.72	94	6.48	270	18.62	640	44.14	1040	71.72
15	1.03	55	3.79	95	6.55	275	18.96	650	44.82	1050	72.41
16	1.10	56	3.86	96	6.62	280	19.31	660	45.52	1060	73.10
17	1.17	57	3.93	97	6.69	285	19.65	670	46.21	1070	73.79
18	1.24	58	4.00	98	6.76	290	20.00	680	46.90	1080	74.48
19	1.31	59	4.07	99	6.83	295	20.34	690	47.59	1090	75.17
20	1.38	60	4.14	100	6.90	300	20.69	700	48.27	1100	75.86
21	1.45	61	4.21	105	7.24	310	21.37	710	48.97	1120	77.24
22	1.52	62	4.28	110	7.58	320	22.06	720	49.66	1140	78.62
23	1.59	63	4.34	115	7.93	330	22.75	730	50.34	1160	80.00
24	1.65	64	4.41	120	8.27	340	23.44	740	51.03	1180	81.38
25	1.72	65	4.48	125	8.62	350	24.13	750	51.71	1200	82.76
26	1.79	66	4.55	130	8.96	360	24.82	760	52.41	1220	84.14
27	1.86	67	4.62	135	9.31	370	25.51	770	53.10	1240	85.52
28	1.93	68	4.69	140	9.65	380	26.20	780	53.79	1260	86.90
29	2.00	69	4.76	145	10.10	390	26.89	790	54.48	1280	88.28
30	2.07	70	4.83	150	10.34	400	27.58	800	55.16	1300	89.66
31	2.14	71	4.90	155	10.69	410	28.27	810	55.86	1320	91.03
32	2.21	72	4.96	160	11.03	420	28.96	820	56.55	1340	92.41
33	2.28	73	5.03	165	11.38	430	29.65	830	57.24	1360	93.79
34	2.34	74	5.10	170	11.72	440	30.34	840	57.93	1380	95.17
35	2.41	75	5.17	175	12.07	450	31.03	850	58.61	1400	96.55
36	2.48	76	5.24	180	12.41	460	31.72	860	59.31	1420	97.93
37	2.55	77	5.31	185	12.76	470	32.41	870	60.00	1440	99.31
38	2.62	78	5.38	190	13.10	480	33.10	880	60.69	1460	100.69
39	2.69	79	5.45	195	13.45	490	33.79	890	61.38	1480	102.07
40	2.76	80	5.52	200	13.79	500	34.48	900	62.06	1500	103.45

## Sizing of pipelines for saturated steam

### Dimensioni tubazioni per vapore saturo

P bar (gauge)	velocity of steam m/s	capacities in kg/h														
		DN 15	20	25	32	40	50	65	80	100	125	150	200	250	300	
0.30	15	10	16	26	45	60	97	161	221	373	564	825	1387	2205	3119	
	25	16	27	44	75	101	161	268	369	622	940	1375	2311	3675	5199	
	40	26	43	70	120	161	258	429	590	995	1504	2201	3698	5881	8318	
0.50	15	11	18	30	51	68	109	181	249	420	635	928	1560	2481	3509	
	25	18	30	50	84	113	181	301	415	699	1058	1547	2600	4135	5849	
	40	29	49	79	135	181	290	482	664	1119	1692	2476	4160	6616	9358	
1	15	14	24	39	66	89	142	237	326	550	831	1216	2043	3249	4596	
	25	24	40	65	111	148	237	395	544	916	1385	2027	3405	5415	7660	
	40	38	64	104	177	237	380	631	870	1466	2216	3242	5449	8864	12255	
2	15	21	35	57	97	130	208	346	476	803	1214	1776	2984	4745	6712	
	25	35	58	95	161	217	346	576	794	1338	2023	2960	4973	7908	11188	
	40	56	93	152	258	347	554	922	1270	2140	3237	4735	7957	12653	17898	
3	15	27	46	75	127	171	273	454	625	1053	1592	2329	3914	6224	8904	
	25	46	76	124	212	284	454	756	1041	1755	2653	3982	6523	10373	14673	
	40	73	122	199	339	455	727	1210	1666	2908	4245	6211	10437	16597	23476	
4	15	34	56	92	156	210	336	559	770	1297	1961	2870	4822	7668	10846	
	25	56	94	153	261	350	560	931	1293	2162	3269	4793	8037	12780	18077	
	40	90	150	245	417	560	896	1490	2052	3459	5230	7652	12859	20447	28923	
5	15	40	68	111	189	253	405	674	928	1564	2365	3460	5815	9246	13079	
	25	67	113	195	315	422	675	1123	1547	2607	3942	5767	9691	15411	21798	
	40	107	181	295	503	675	1090	1797	2475	4171	6307	9228	15506	24657	34878	
6	15	46	77	126	215	289	461	768	1057	1782	2694	3942	6624	10533	14898	
	25	77	129	210	358	481	769	1279	1762	2969	4490	6570	11039	17554	24831	
	40	124	206	336	573	769	1230	2047	2819	4751	7184	10511	17683	29087	39729	
7	15	53	88	144	245	328	525	873	1203	2027	3065	4484	7534	11981	16947	
	25	88	146	239	408	547	875	1455	2004	3378	5108	7473	12557	19968	28245	
	40	141	234	383	652	875	1399	2329	3207	5404	8172	11957	20092	31949	45192	
8	15	59	98	160	273	366	586	975	1342	2262	3421	5005	8410	13374	18917	
	25	98	163	267	455	611	976	1625	2237	3771	5702	8342	14017	22290	31529	
	40	157	262	427	728	977	1562	2599	3580	6033	9123	13347	22428	35664	50446	
9	15	65	109	178	302	406	649	1080	1488	2507	3791	5547	9321	14822	20965	
	25	109	181	296	504	677	1082	1800	2480	4179	6319	9245	15535	24703	34942	
	40	174	290	473	807	1093	1731	2981	3967	6686	10110	14792	24856	39524	55907	
10	15	72	119	195	332	445	712	1184	1631	2748	4155	6080	10216	16245	22979	
	25	120	199	324	553	742	1186	1973	2718	4580	6926	10133	17027	27075	38298	
	40	191	318	519	884	1187	1898	3157	4348	7328	11081	16212	27243	43321	61277	
12	15	84	140	228	389	522	834	1388	1911	3221	4871	7126	11975	19042	26935	
	25	140	233	380	648	869	1390	2313	3195	5389	8118	11877	19959	31737	44892	
	40	224	372	608	1036	1391	2224	3701	5097	8590	12989	19004	31934	50780	71828	
14	15	96	160	261	445	597	954	1588	2187	3685	5572	8152	13699	21783	30812	
	25	160	266	435	741	995	1590	2646	3644	6141	9287	13587	22831	36306	51354	
	40	256	426	696	1185	1591	2545	4234	5831	9826	14859	21739	36530	58089	82166	
16	15	108	180	294	502	673	1077	1791	2467	4157	6288	9197	15455	24576	34763	
	25	181	300	491	836	1122	1794	2985	4111	6929	10477	15329	25758	40960	57938	
	40	289	481	785	1337	1795	2871	4777	6578	11086	16764	24526	41214	65536	92701	
18	15	121	201	328	559	750	1200	1996	2749	4632	7005	10248	17221	27385	38736	
	25	201	335	547	931	1250	1999	3326	4581	7721	11675	17081	28702	45641	64559	
	40	322	536	875	1490	2001	3199	5322	7330	12353	18680	27329	45924	73026	103295	
20	15	134	222	363	618	829	1326	2206	3038	5120	7742	11327	19034	30267	42813	
	25	223	370	604	1030	1382	2210	3677	5063	8533	12904	18879	31724	50446	71355	
	40	356	592	967	1647	2211	3536	5883	8102	13653	20646	30206	50758	80713	114168	
25	15	165	275	448	764	1026	1640	2729	3758	6333	9577	14012	23545	37440	52959	
	25	275	458	747	1273	1709	2733	4548	6263	10556	15962	23353	39241	62400	88265	
	40	441	732	1196	2038	2735	4373	7277	10021	16889	25539	37364	62786	99840	141224	

#### example

**required:** The pipeline diameter for saturated steam capacity of 2300 kg/h at 12 bar (gauge) and a velocity of 25m/s.

**solution:** Go, in the above capacity table, to the horizontal line for 12 bar (velocity 25 m/s) and look for a capacity value equal to or higher than 2300 kg/h. In this case you will find DN 65.

In long supply lines high pressure drops are to be avoided.

*Steam table for saturated steam*  
*Tabella per vapore saturo*

absolute pressure bar	temperature saturated steam °C	specific enthalpy						specific volume steam m <sup>3</sup> /kg
		water		evaporation		steam		
		kJ/kg	kcal/kg	kJ/kg	kcal/kg	kJ/kg	kcal/kg	
0.01	7.0	29.34	7.0	2485	594	2514	601	129.2
0.05	32.9	137.8	32.9	2424	579	2562	612	28.19
0.1	45.8	191.8	45.8	2393	572	2585	618	14.67
0.2	60.1	251.5	60.1	2358	563	2610	623	7.650
0.3	69.1	289.3	69.1	2336	558	2625	627	5.229
0.4	75.9	317.7	75.9	2319	554	2637	630	3.993
0.5	81.3	340.6	81.4	2305	551	2646	632	3.240
0.6	86.0	359.9	86.0	2294	548	2654	634	2.732
0.7	90.0	376.8	90.0	2283	545	2660	635	2.365
0.8	93.5	391.7	93.6	2274	543	2666	637	2.087
0.9	96.7	405.2	96.8	2266	541	2671	638	1.869
1.0	99.6	417	99.6	2258	539	2674	639	1.694
1.1	102.3	429	102.5	2251	538	2680	640	1.549
1.2	104.8	439	104.9	2244	536	2683	641	1.428
1.3	107.1	449	107.2	2238	535	2687	642	1.325
1.4	109.3	458	109.4	2232	533	2690	642	1.236
1.5	111.4	467	111.5	2226	532	2693	643	1.159
1.6	113.3	475	113.5	2221	530	2696	644	1.091
1.7	115.2	483	115.4	2216	529	2699	644	1.031
1.8	116.9	491	117.3	2211	528	2702	645	0.977
1.9	118.6	498	118.9	2206	527	2704	646	0.929
2.0	120.2	505	120.6	2201	526	2706	647	0.885
2.1	122.0	512	122.4	2197	525	2709	647	0.841
2.2	123.5	519	123.9	2193	524	2712	648	0.806
2.3	124.9	525	125.3	2189	523	2713	648	0.773
2.4	126.3	531	126.7	2185	522	2715	649	0.743
2.5	127.4	535	127.8	2181	521	2716	649	0.718
2.6	128.9	542	129.4	2177	520	2719	650	0.689
2.7	130.1	547	130.7	2174	519	2721	650	0.665
2.8	131.4	552	131.9	2170	518	2722	650	0.643
2.9	132.5	557	133.1	2167	517	2724	651	0.622
3.0	133.5	561	134.0	2163	517	2724	651	0.606
3.5	138.9	584	139.5	2147	513	2731	652	0.524
4.0	143.6	605	144.5	2133	509	2738	654	0.462
4.5	147.9	623	148.8	2120	506	2743	655	0.414