



The Company

We are an established world force in the design and manufacture of instrumentation for industrial process control, flow measurement, gas and liquid analysis and environmental applications.

As a part of ABB, a world leader in process automation technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

The UKAS Calibration Laboratory No. 0255 is just one of the ten flow calibration plants operated by the Company and is indicative of our dedication to quality and accuracy.

EN ISO 9001:2000



Cert. No. Q 05907

EN 29001 (ISO 9001)



Lenno, Italy –
Cert. No. 9/90A

Stonehouse, U.K.



Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Publications Department.

Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

Contents

1	Saturated Steam Data	2
2	Gases	20

1 Saturated Steam Data

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
1	99.6	0.5902	1.3178	0.01226	0.984800
1.05	101.0	0.6178	1.3175	0.01230	0.984295
1.1	102.3	0.6452	1.3173	0.01235	0.983798
1.15	103.6	0.6726	1.3171	0.01239	0.983308
1.2	104.8	0.6999	1.3168	0.01243	0.982826
1.25	106.0	0.7272	1.3166	0.01247	0.982350
1.3	107.1	0.7544	1.3164	0.01251	0.981881
1.35	108.2	0.7815	1.3162	0.01255	0.981417
1.4	109.3	0.8085	1.3160	0.01259	0.980960
1.45	110.4	0.8355	1.3158	0.01262	0.980508
1.5	111.4	0.8624	1.3156	0.01266	0.980061
1.55	112.4	0.8893	1.3154	0.01269	0.979619
1.6	113.3	0.9161	1.3152	0.01273	0.979182
1.65	114.3	0.9429	1.3150	0.01276	0.978749
1.7	115.2	0.9696	1.3148	0.01279	0.978321
1.75	116.1	0.9962	1.3146	0.01282	0.977897
1.8	116.9	1.0228	1.3145	0.01285	0.977477
1.85	117.8	1.0494	1.3143	0.01288	0.977061
1.9	118.6	1.0759	1.3141	0.01291	0.976649
1.95	119.4	1.1024	1.3140	0.01294	0.976240
2	120.2	1.1289	1.3138	0.01296	0.975835
2.05	121.0	1.1553	1.3136	0.01299	0.975433
2.1	121.8	1.1816	1.3135	0.01302	0.975035
2.15	122.5	1.2079	1.3133	0.01304	0.974640
2.2	123.3	1.2342	1.3132	0.01307	0.974248
2.25	124.0	1.2605	1.3130	0.01309	0.973859
2.3	124.7	1.2867	1.3129	0.01312	0.973473
2.35	125.4	1.3129	1.3127	0.01314	0.973089
2.4	126.1	1.3390	1.3126	0.01317	0.972709
2.45	126.8	1.3651	1.3124	0.01319	0.972331
2.5	127.4	1.3912	1.3123	0.01321	0.971956
2.55	128.1	1.4173	1.3121	0.01323	0.971583
2.6	128.7	1.4433	1.3120	0.01326	0.971213
2.65	129.4	1.4693	1.3119	0.01328	0.970845
2.7	130.0	1.4953	1.3117	0.01330	0.970480
2.75	130.6	1.5212	1.3116	0.01332	0.970116
2.8	131.2	1.5471	1.3115	0.01334	0.969755
2.85	131.8	1.5730	1.3113	0.01336	0.969397
2.9	132.4	1.5989	1.3112	0.01338	0.969040
2.95	133.0	1.6247	1.3111	0.01340	0.968685
3	133.6	1.6505	1.3109	0.01342	0.968333
3.05	134.1	1.6763	1.3108	0.01344	0.967982

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
3.1	134.7	1.7021	1.3107	0.01346	0.967634
3.15	135.2	1.7278	1.3106	0.01348	0.967287
3.2	135.8	1.7536	1.3104	0.01350	0.966942
3.25	136.3	1.7793	1.3103	0.01352	0.966599
3.3	136.8	1.8049	1.3102	0.01354	0.966258
3.35	137.4	1.8306	1.3101	0.01355	0.965919
3.4	137.9	1.8562	1.3100	0.01357	0.965581
3.45	138.4	1.8818	1.3098	0.01359	0.965245
3.5	138.9	1.9074	1.3097	0.01361	0.964911
3.55	139.4	1.9330	1.3096	0.01362	0.964578
3.6	139.9	1.9586	1.3095	0.01364	0.964247
3.65	140.4	1.9841	1.3094	0.01366	0.963917
3.7	140.9	2.0096	1.3093	0.01368	0.963589
3.75	141.3	2.0351	1.3092	0.01369	0.963263
3.8	141.8	2.0606	1.3091	0.01371	0.962938
3.85	142.3	2.0861	1.3090	0.01372	0.962614
3.9	142.7	2.1115	1.3088	0.01374	0.962292
3.95	143.2	2.1370	1.3087	0.01376	0.961971
4	143.6	2.1624	1.3086	0.01377	0.961652
4.05	144.1	2.1878	1.3085	0.01379	0.961334
4.1	144.5	2.2132	1.3084	0.01380	0.961017
4.15	145.0	2.2385	1.3083	0.01382	0.960702
4.2	145.4	2.2639	1.3082	0.01383	0.960388
4.25	145.8	2.2892	1.3081	0.01385	0.960075
4.3	146.3	2.3145	1.3080	0.01386	0.959764
4.35	146.7	2.3399	1.3079	0.01388	0.959454
4.4	147.1	2.3651	1.3078	0.01389	0.959145
4.45	147.5	2.3904	1.3077	0.01391	0.958837
4.5	147.9	2.4157	1.3076	0.01392	0.958530
4.55	148.3	2.4409	1.3075	0.01393	0.958225
4.6	148.8	2.4662	1.3074	0.01395	0.957920
4.65	149.2	2.4914	1.3073	0.01396	0.957617
4.7	149.6	2.5166	1.3072	0.01398	0.957315
4.75	149.9	2.5418	1.3071	0.01399	0.957014
4.8	150.3	2.5670	1.3071	0.01400	0.956714
4.85	150.7	2.5922	1.3070	0.01402	0.956415
4.9	151.1	2.6174	1.3069	0.01403	0.956118
4.95	151.5	2.6425	1.3068	0.01404	0.955821
5	151.9	2.6677	1.3067	0.01406	0.955525
5.05	152.2	2.6928	1.3066	0.01407	0.955230
5.1	152.6	2.7179	1.3065	0.01408	0.954937
5.15	153.0	2.7430	1.3064	0.01409	0.954644

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
5.2	153.4	2.7881	1.3063	0.01411	0.954352
5.25	153.7	2.7932	1.3062	0.01412	0.954061
5.3	154.1	2.8183	1.3062	0.01413	0.953772
5.35	154.4	2.8433	1.3061	0.01414	0.953483
5.4	154.8	2.8684	1.3060	0.01416	0.953195
5.45	155.1	2.8934	1.3059	0.01417	0.952908
5.5	155.5	2.9185	1.3058	0.01418	0.952622
5.55	155.8	2.9435	1.3057	0.01419	0.952336
5.6	156.2	2.9685	1.3056	0.01420	0.952052
5.65	156.5	2.9935	1.3056	0.01422	0.951768
5.7	156.9	3.0185	1.3055	0.01423	0.951486
5.75	157.2	3.0435	1.3054	0.01424	0.951204
5.8	157.5	3.0685	1.3053	0.01425	0.950923
5.85	157.9	3.0935	1.3052	0.01426	0.950643
5.9	158.2	3.1184	1.3051	0.01427	0.950364
5.95	158.5	3.1434	1.3051	0.01429	0.950085
6	158.9	3.1683	1.3050	0.01430	0.949807
6.05	159.2	3.1932	1.3049	0.01431	0.949531
6.1	159.5	3.2182	1.3048	0.01432	0.949254
6.15	159.8	3.2431	1.3047	0.01433	0.948979
6.2	160.1	3.2680	1.3047	0.01434	0.948705
6.25	160.5	3.2929	1.3046	0.01435	0.948431
6.3	160.8	3.3178	1.3045	0.01436	0.948158
6.35	161.1	3.3427	1.3044	0.01437	0.947885
6.4	161.4	3.3676	1.3043	0.01438	0.947614
6.45	161.7	3.3924	1.3043	0.01439	0.947343
6.5	162.0	3.4173	1.3042	0.01441	0.947073
6.55	162.3	3.4422	1.3041	0.01442	0.946804
6.6	162.6	3.4670	1.3040	0.01443	0.946535
6.65	162.9	3.4918	1.3040	0.01444	0.946267
6.7	163.2	3.5167	1.3039	0.01445	0.946000
6.75	163.5	3.5415	1.3038	0.01446	0.945733
6.8	163.8	3.5663	1.3037	0.01447	0.945467
6.85	164.1	3.5911	1.3037	0.01448	0.945202
6.9	164.4	3.6160	1.3036	0.01449	0.944937
6.95	164.7	3.6408	1.3035	0.01450	0.944673
7	165.0	3.6656	1.3035	0.01451	0.944410
7.05	165.3	3.6903	1.3034	0.01452	0.944147
7.1	165.6	3.7151	1.3033	0.01453	0.943885
7.15	165.8	3.7399	1.3032	0.01454	0.943624
7.2	166.1	3.7647	1.3032	0.01455	0.943363
7.25	166.4	3.7894	1.3031	0.01456	0.943103
7.3	166.7	3.8142	1.3030	0.01457	0.942844
7.35	167.0	3.8390	1.3030	0.01458	0.942585

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
7.4	167.2	3.8637	1.3029	0.01459	0.942327
7.45	167.5	3.8884	1.3028	0.01459	0.942069
7.5	167.8	3.9132	1.3027	0.01460	0.941812
7.55	168.1	3.9379	1.3027	0.01461	0.941555
7.6	168.3	3.9626	1.3026	0.01462	0.941299
7.65	168.6	3.9874	1.3025	0.01463	0.941044
7.7	168.9	4.0121	1.3025	0.01464	0.940789
7.75	169.1	4.0368	1.3024	0.01465	0.940535
7.8	169.4	4.0615	1.3023	0.01466	0.940282
7.85	169.7	4.0862	1.3023	0.01467	0.940028
7.9	169.9	4.1109	1.3022	0.01468	0.939776
7.95	170.2	4.1356	1.3021	0.01469	0.939524
8	170.4	4.1603	1.3021	0.01470	0.939273
8.05	170.7	4.1849	1.3020	0.01470	0.939022
8.1	171.0	4.2096	1.3019	0.01471	0.938771
8.15	171.2	4.2343	1.3019	0.01472	0.938522
8.2	171.5	4.2590	1.3018	0.01473	0.938272
8.25	171.7	4.2836	1.3017	0.01474	0.938024
8.3	172.0	4.3083	1.3017	0.01475	0.937775
8.35	172.2	4.3329	1.3016	0.01476	0.937528
8.4	172.5	4.3576	1.3016	0.01477	0.937281
8.45	172.7	4.3822	1.3015	0.01477	0.937034
8.5	173.0	4.4069	1.3014	0.01478	0.936788
8.55	173.2	4.4315	1.3014	0.01479	0.936542
8.6	173.5	4.4561	1.3013	0.01480	0.936297
8.65	173.7	4.4808	1.3012	0.01481	0.936052
8.7	174.0	4.5054	1.3012	0.01482	0.935808
8.75	174.2	4.5300	1.3011	0.01482	0.935564
8.8	174.4	4.5546	1.3011	0.01483	0.935321
8.85	174.7	4.5793	1.3010	0.01484	0.935078
8.9	174.9	4.6039	1.3009	0.01485	0.934836
8.95	175.2	4.6285	1.3009	0.01486	0.934594
9	175.4	4.6531	1.3008	0.01487	0.934353
9.05	175.6	4.6777	1.3008	0.01487	0.934112
9.1	175.9	4.7023	1.3007	0.01488	0.933871
9.15	176.1	4.7269	1.3006	0.01489	0.933631
9.2	176.3	4.7515	1.3006	0.01490	0.933392
9.25	176.6	4.7760	1.3005	0.01491	0.933153
9.3	176.8	4.8006	1.3005	0.01491	0.932914
9.35	177.0	4.8252	1.3004	0.01492	0.932676
9.4	177.2	4.8498	1.3003	0.01493	0.932438
9.45	177.5	4.8744	1.3003	0.01494	0.932201
9.5	177.7	4.8989	1.3002	0.01495	0.931964
9.55	177.9	4.9235	1.3002	0.01495	0.931727

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
9.6	178.2	4.9481	1.3001	0.01496	0.931491
9.65	178.4	4.9726	1.3000	0.01497	0.931256
9.7	178.6	4.9972	1.3000	0.01498	0.931020
9.75	178.8	5.0217	1.2999	0.01498	0.930786
9.8	179.0	5.0463	1.2999	0.01499	0.930551
9.85	179.3	5.0708	1.2998	0.01500	0.930317
9.9	179.5	5.0954	1.2998	0.01501	0.930084
9.95	179.7	5.1199	1.2997	0.01501	0.929851
10	179.9	5.1445	1.2997	0.01502	0.929618
10.1	180.3	5.1936	1.2995	0.01504	0.929154
10.2	180.8	5.2426	1.2994	0.01505	0.928691
10.3	181.2	5.2917	1.2993	0.01507	0.928230
10.4	181.6	5.3407	1.2992	0.01508	0.927770
10.5	182.0	5.3898	1.2991	0.01510	0.927312
10.6	182.5	5.4388	1.2990	0.01511	0.926856
10.7	182.9	5.4878	1.2989	0.01512	0.926400
10.8	183.3	5.5369	1.2988	0.01514	0.925947
10.9	183.7	5.5859	1.2987	0.01515	0.925495
11	184.1	5.6349	1.2986	0.01517	0.925044
11.1	184.5	5.6839	1.2985	0.01518	0.924594
11.2	184.9	5.7329	1.2984	0.01519	0.924147
11.3	185.3	5.7818	1.2983	0.01521	0.923700
11.4	185.7	5.8308	1.2982	0.01522	0.923255
11.5	186.1	5.8798	1.2981	0.01523	0.922811
11.6	186.5	5.9288	1.2980	0.01525	0.922368
11.7	186.9	5.9777	1.2979	0.01526	0.921927
11.8	187.2	6.0267	1.2978	0.01527	0.921487
11.9	187.6	6.0756	1.2977	0.01529	0.921048
12	188.0	6.1246	1.2976	0.01530	0.920611
12.1	188.4	6.1735	1.2975	0.01531	0.920175
12.2	188.7	6.2224	1.2974	0.01533	0.919740
12.3	189.1	6.2714	1.2973	0.01534	0.919306
12.4	189.5	6.3203	1.2972	0.01535	0.918874
12.5	189.8	6.3692	1.2971	0.01536	0.918442
12.6	190.2	6.4181	1.2970	0.01538	0.918012
12.7	190.6	6.4671	1.2969	0.01539	0.917583
12.8	190.9	6.5160	1.2968	0.01540	0.917156
12.9	191.3	6.5649	1.2967	0.01541	0.916729
13	191.6	6.6138	1.2966	0.01543	0.916303
13.1	192.0	6.6627	1.2966	0.01544	0.915879
13.2	192.3	6.7116	1.2965	0.01545	0.915456
13.3	192.7	6.7605	1.2964	0.01546	0.915034
13.4	193.0	6.8094	1.2963	0.01547	0.914613
13.5	193.4	6.8583	1.2962	0.01549	0.914193

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
13.6	193.7	6.9072	1.2961	0.01550	0.913774
13.7	194.1	6.9561	1.2960	0.01551	0.913356
13.8	194.4	7.0050	1.2959	0.01552	0.912939
13.9	194.7	7.0539	1.2959	0.01553	0.912523
14	195.1	7.1028	1.2958	0.01554	0.912108
14.1	195.4	7.1517	1.2957	0.01556	0.911695
14.2	195.7	7.2006	1.2956	0.01557	0.911282
14.3	196.1	7.2495	1.2955	0.01558	0.910870
14.4	196.4	7.2984	1.2954	0.01559	0.910459
14.5	196.7	7.3473	1.2954	0.01560	0.910049
14.6	197.0	7.3962	1.2953	0.01561	0.909641
14.7	197.4	7.4451	1.2952	0.01562	0.909233
14.8	197.7	7.4940	1.2951	0.01563	0.908826
14.9	198.0	7.5429	1.2950	0.01565	0.908420
15	198.3	7.5918	1.2950	0.01566	0.908015
15.1	198.6	7.6407	1.2949	0.01567	0.907610
15.2	199.0	7.6896	1.2948	0.01568	0.907207
15.3	199.3	7.7385	1.2947	0.01569	0.906805
15.4	199.6	7.7874	1.2946	0.01570	0.906403
15.5	199.9	7.8364	1.2946	0.01571	0.906003
15.6	200.2	7.8853	1.2945	0.01572	0.905603
15.7	200.5	7.9342	1.2944	0.01573	0.905204
15.8	200.8	7.9831	1.2943	0.01574	0.904807
15.9	201.1	8.0320	1.2943	0.01575	0.904409
16	201.4	8.0809	1.2942	0.01576	0.904013
16.1	201.7	8.1299	1.2941	0.01577	0.903618
16.2	202.0	8.1788	1.2940	0.01578	0.903223
16.3	202.3	8.2277	1.2940	0.01579	0.902830
16.4	202.6	8.2767	1.2939	0.01580	0.902437
16.5	202.9	8.3256	1.2938	0.01581	0.902045
16.6	203.2	8.3745	1.2937	0.01582	0.901653
16.7	203.5	8.4235	1.2937	0.01583	0.901263
16.8	203.8	8.4724	1.2936	0.01584	0.900873
16.9	204.1	8.5214	1.2935	0.01585	0.900484
17	204.3	8.5703	1.2935	0.01586	0.900096
17.1	204.6	8.6193	1.2934	0.01587	0.899709
17.2	204.9	8.6683	1.2933	0.01588	0.899322
17.3	205.2	8.7172	1.2933	0.01589	0.898936
17.4	205.5	8.7662	1.2932	0.01590	0.898551
17.5	205.8	8.8152	1.2931	0.01591	0.898167
17.6	206.0	8.8642	1.2931	0.01592	0.897784
17.7	206.3	8.9131	1.2930	0.01593	0.897401
17.8	206.6	8.9621	1.2929	0.01594	0.897019
17.9	206.9	9.0111	1.2929	0.01595	0.896637

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
18	207.2	9.0601	1.2928	0.01596	0.896257
18.1	207.4	9.1091	1.2927	0.01597	0.895877
18.2	207.7	9.1581	1.2927	0.01598	0.895497
18.3	208.0	9.2072	1.2926	0.01599	0.895119
18.4	208.2	9.2562	1.2925	0.01600	0.894741
18.5	208.5	9.3052	1.2925	0.01601	0.894364
18.6	208.8	9.3542	1.2924	0.01602	0.893988
18.7	209.0	9.4033	1.2923	0.01603	0.893612
18.8	209.3	9.4523	1.2923	0.01604	0.893237
18.9	209.6	9.5014	1.2922	0.01605	0.892862
19	209.8	9.5504	1.2922	0.01605	0.892489
19.1	210.1	9.5995	1.2921	0.01606	0.892115
19.2	210.4	9.6486	1.2920	0.01607	0.891743
19.3	210.6	9.6976	1.2920	0.01608	0.891371
19.4	210.9	9.7467	1.2919	0.01609	0.891000
19.5	211.1	9.7958	1.2918	0.01610	0.890630
19.6	211.4	9.8449	1.2918	0.01611	0.890260
19.7	211.7	9.8940	1.2917	0.01612	0.889891
19.8	211.9	9.9431	1.2917	0.01613	0.889522
19.9	212.2	9.9922	1.2916	0.01614	0.889154
20	212.4	10.0413	1.2916	0.01614	0.888787
20.1	212.7	10.0905	1.2915	0.01615	0.888420
20.2	212.9	10.1396	1.2914	0.01616	0.888054
20.3	213.2	10.1887	1.2914	0.01617	0.887689
20.4	213.4	10.2379	1.2913	0.01618	0.887324
20.5	213.7	10.2870	1.2913	0.01619	0.886959
20.6	213.9	10.3362	1.2912	0.01620	0.886596
20.7	214.2	10.3854	1.2912	0.01621	0.886233
20.8	214.4	10.4346	1.2911	0.01621	0.885870
20.9	214.7	10.4837	1.2911	0.01622	0.885508
21	214.9	10.5329	1.2910	0.01623	0.885147
21.1	215.1	10.5821	1.2909	0.01624	0.884786
21.2	215.4	10.6314	1.2909	0.01625	0.884426
21.3	215.6	10.6806	1.2908	0.01626	0.884066
21.4	215.9	10.7298	1.2908	0.01626	0.883707
21.5	216.1	10.7790	1.2907	0.01627	0.883349
21.6	216.3	10.8283	1.2907	0.01628	0.882991
21.7	216.6	10.8775	1.2906	0.01629	0.882633
21.8	216.8	10.9268	1.2906	0.01630	0.882276
21.9	217.1	10.9761	1.2905	0.01631	0.881920
22	217.3	11.0253	1.2905	0.01631	0.881564
22.1	217.5	11.0746	1.2904	0.01632	0.881209
22.2	217.8	11.1239	1.2904	0.01633	0.880854
22.3	218.0	11.1732	1.2903	0.01634	0.880500

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
22.4	218.2	11.2225	1.2903	0.01635	0.880146
22.5	218.5	11.2719	1.2902	0.01636	0.879793
22.6	218.7	11.3212	1.2902	0.01636	0.879441
22.7	218.9	11.3705	1.2901	0.01637	0.879089
22.8	219.1	11.4199	1.2901	0.01638	0.878737
22.9	219.4	11.4692	1.2900	0.01639	0.878386
23	219.6	11.5186	1.2900	0.01640	0.878035
23.1	219.8	11.5680	1.2899	0.01640	0.877685
23.2	220.0	11.6174	1.2899	0.01641	0.877336
23.3	220.3	11.6668	1.2898	0.01642	0.876987
23.4	220.5	11.7162	1.2898	0.01643	0.876638
23.5	220.7	11.7656	1.2898	0.01644	0.876290
23.6	220.9	11.8150	1.2897	0.01644	0.875943
23.7	221.2	11.8644	1.2897	0.01645	0.875596
23.8	221.4	11.9139	1.2896	0.01646	0.875249
23.9	221.6	11.9633	1.2896	0.01647	0.874903
24	221.8	12.0128	1.2895	0.01647	0.874557
24.1	222.0	12.0623	1.2895	0.01648	0.874212
24.2	222.3	12.1118	1.2894	0.01649	0.873867
24.3	222.5	12.1613	1.2894	0.01650	0.873523
24.4	222.7	12.2108	1.2894	0.01650	0.873179
24.5	222.9	12.2603	1.2893	0.01651	0.872836
24.6	223.1	12.3098	1.2893	0.01652	0.872493
24.7	223.3	12.3593	1.2892	0.01653	0.872151
24.8	223.6	12.4089	1.2892	0.01654	0.871809
24.9	223.8	12.4584	1.2892	0.01654	0.871467
25	224.0	12.5080	1.2891	0.01655	0.871126
25.1	224.2	12.5576	1.2891	0.01656	0.870786
25.2	224.4	12.6072	1.2890	0.01657	0.870446
25.3	224.6	12.6568	1.2890	0.01657	0.870106
25.4	224.8	12.7064	1.2890	0.01658	0.869767
25.5	225.0	12.7560	1.2889	0.01659	0.869428
25.6	225.3	12.8056	1.2889	0.01659	0.869090
25.7	225.5	12.8553	1.2888	0.01660	0.868752
25.8	225.7	12.9049	1.2888	0.01661	0.868414
25.9	225.9	12.9546	1.2888	0.01662	0.868077
26	226.1	13.0043	1.2887	0.01662	0.867740
26.1	226.3	13.0540	1.2887	0.01663	0.867404
26.2	226.5	13.1037	1.2886	0.01664	0.867068
26.3	226.7	13.1534	1.2886	0.01665	0.866733
26.4	226.9	13.2031	1.2886	0.01665	0.866398
26.5	227.1	13.2528	1.2885	0.01666	0.866063
26.6	227.3	13.3026	1.2885	0.01667	0.865729
26.7	227.5	13.3523	1.2885	0.01668	0.865395

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
26.8	227.7	13.4021	1.2884	0.01668	0.865062
26.9	227.9	13.4519	1.2884	0.01669	0.864729
27	228.1	13.5017	1.2884	0.01670	0.864397
27.1	228.3	13.5515	1.2883	0.01670	0.864064
27.2	228.5	13.6013	1.2883	0.01671	0.863733
27.3	228.7	13.6511	1.2883	0.01672	0.863401
27.4	228.9	13.7010	1.2882	0.01672	0.863070
27.5	229.1	13.7508	1.2882	0.01673	0.862740
27.6	229.3	13.8007	1.2882	0.01674	0.862410
27.7	229.5	13.8506	1.2881	0.01675	0.862080
27.8	229.7	13.9004	1.2881	0.01675	0.861750
27.9	229.9	13.9503	1.2881	0.01676	0.861421
28	230.1	14.0002	1.2880	0.01677	0.861093
28.1	230.3	14.0502	1.2880	0.01677	0.860764
28.2	230.5	14.1001	1.2880	0.01678	0.860436
28.3	230.7	14.1501	1.2879	0.01679	0.860109
28.4	230.9	14.2000	1.2879	0.01679	0.859782
28.5	231.1	14.2500	1.2879	0.01680	0.859455
28.6	231.3	14.3000	1.2879	0.01681	0.859129
28.7	231.4	14.3500	1.2878	0.01682	0.858803
28.8	231.6	14.4000	1.2878	0.01682	0.858477
28.9	231.8	14.4500	1.2878	0.01683	0.858152
29	232.0	14.5001	1.2877	0.01684	0.857827
29.1	232.2	14.5501	1.2877	0.01684	0.857502
29.2	232.4	14.6002	1.2877	0.01685	0.857178
29.3	232.6	14.6502	1.2877	0.01686	0.856854
29.4	232.8	14.7003	1.2876	0.01686	0.856530
29.5	233.0	14.7504	1.2876	0.01687	0.856207
29.6	233.1	14.8005	1.2876	0.01688	0.855884
29.7	233.3	14.8507	1.2876	0.01688	0.855562
29.8	233.5	14.9008	1.2875	0.01689	0.855240
29.9	233.7	14.9510	1.2875	0.01690	0.854918
30	233.9	15.0011	1.2875	0.01690	0.854596
30.1	234.1	15.0513	1.2875	0.01691	0.854275
30.2	234.3	15.1015	1.2874	0.01692	0.853955
30.3	234.4	15.1517	1.2874	0.01692	0.853634
30.4	234.6	15.2019	1.2874	0.01693	0.853314
30.5	234.8	15.2522	1.2874	0.01694	0.852994
30.6	235.0	15.3024	1.2873	0.01694	0.852675
30.7	235.2	15.3527	1.2873	0.01695	0.852356
30.8	235.4	15.4030	1.2873	0.01696	0.852037
30.9	235.5	15.4532	1.2873	0.01696	0.851718
31	235.7	15.5035	1.2872	0.01697	0.851400
31.1	235.9	15.5539	1.2872	0.01697	0.851083

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
31.2	236.1	15.6042	1.2872	0.01698	0.850765
31.3	236.3	15.6545	1.2872	0.01699	0.850448
31.4	236.4	15.7049	1.2872	0.01699	0.850131
31.5	236.6	15.7553	1.2871	0.01700	0.849815
31.6	236.8	15.8056	1.2871	0.01701	0.849498
31.7	237.0	15.8560	1.2871	0.01701	0.849183
31.8	237.1	15.9065	1.2871	0.01702	0.848867
31.9	237.3	15.9569	1.2871	0.01703	0.848552
32	237.5	16.0073	1.2870	0.01703	0.848237
32.1	237.7	16.0578	1.2870	0.01704	0.847922
32.2	237.8	16.1083	1.2870	0.01705	0.847608
32.3	238.0	16.1587	1.2870	0.01705	0.847294
32.4	238.2	16.2092	1.2870	0.01706	0.846980
32.5	238.4	16.2598	1.2869	0.01706	0.846667
32.6	238.5	16.3103	1.2869	0.01707	0.846354
32.7	238.7	16.3608	1.2869	0.01708	0.846041
32.8	238.9	16.4114	1.2869	0.01708	0.845728
32.9	239.1	16.4619	1.2869	0.01709	0.845416
33	239.2	16.5125	1.2869	0.01710	0.845104
33.1	239.4	16.5631	1.2869	0.01710	0.844793
33.2	239.6	16.6137	1.2868	0.01711	0.844481
33.3	239.8	16.6644	1.2868	0.01711	0.844170
33.4	239.9	16.7150	1.2868	0.01712	0.843859
33.5	240.1	16.7657	1.2868	0.01713	0.843549
33.6	240.3	16.8164	1.2868	0.01713	0.843239
33.7	240.4	16.8670	1.2868	0.01714	0.842929
33.8	240.6	16.9177	1.2868	0.01715	0.842619
33.9	240.8	16.9685	1.2867	0.01715	0.842310
34	240.9	17.0192	1.2867	0.01716	0.842001
34.1	241.1	17.0699	1.2867	0.01716	0.841692
34.2	241.3	17.1207	1.2867	0.01717	0.841384
34.3	241.4	17.1715	1.2867	0.01718	0.841076
34.4	241.6	17.2223	1.2867	0.01718	0.840768
34.5	241.8	17.2731	1.2867	0.01719	0.840460
34.6	241.9	17.3239	1.2867	0.01719	0.840153
34.7	242.1	17.3748	1.2866	0.01720	0.839846
34.8	242.3	17.4256	1.2866	0.01721	0.839539
34.9	242.4	17.4765	1.2866	0.01721	0.839232
35	242.6	17.5274	1.2866	0.01722	0.838926
35.1	242.8	17.5783	1.2866	0.01722	0.838620
35.2	242.9	17.6292	1.2866	0.01723	0.838314
35.3	243.1	17.6801	1.2866	0.01724	0.838009
35.4	243.3	17.7311	1.2866	0.01724	0.837704
35.5	243.4	17.7820	1.2866	0.01725	0.837399

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
35.6	243.6	17.8330	1.2866	0.01725	0.837094
35.7	243.7	17.8840	1.2865	0.01726	0.836790
35.8	243.9	17.9350	1.2865	0.01727	0.836486
35.9	244.1	17.9860	1.2865	0.01727	0.836182
36	244.2	18.0371	1.2865	0.01728	0.835878
36.1	244.4	18.0881	1.2865	0.01728	0.835575
36.2	244.5	18.1392	1.2865	0.01729	0.835272
36.3	244.7	18.1903	1.2865	0.01730	0.834969
36.4	244.9	18.2414	1.2865	0.01730	0.834666
36.5	245.0	18.2925	1.2865	0.01731	0.834364
36.6	245.2	18.3436	1.2865	0.01731	0.834062
36.7	245.3	18.3948	1.2865	0.01732	0.833760
36.8	245.5	18.4460	1.2865	0.01733	0.833458
36.9	245.7	18.4972	1.2865	0.01733	0.833157
37	245.8	18.5484	1.2865	0.01734	0.832856
37.1	246.0	18.5996	1.2865	0.01734	0.832555
37.2	246.1	18.6508	1.2865	0.01735	0.832254
37.3	246.3	18.7021	1.2865	0.01735	0.831954
37.4	246.4	18.7533	1.2865	0.01736	0.831654
37.5	246.6	18.8046	1.2865	0.01737	0.831354
37.6	246.7	18.8559	1.2865	0.01737	0.831054
37.7	246.9	18.9072	1.2865	0.01738	0.830755
37.8	247.1	18.9585	1.2865	0.01738	0.830456
37.9	247.2	19.0099	1.2865	0.01739	0.830157
38	247.4	19.0613	1.2865	0.01739	0.829858
38.1	247.5	19.1126	1.2865	0.01740	0.829560
38.2	247.7	19.1640	1.2865	0.01741	0.829261
38.3	247.8	19.2155	1.2865	0.01741	0.828963
38.4	248.0	19.2669	1.2865	0.01742	0.828666
38.5	248.1	19.3183	1.2865	0.01742	0.828368
38.6	248.3	19.3698	1.2865	0.01743	0.828071
38.7	248.4	19.4213	1.2865	0.01743	0.827774
38.8	248.6	19.4728	1.2865	0.01744	0.827477
38.9	248.7	19.5243	1.2865	0.01745	0.827181
39	248.9	19.5758	1.2865	0.01745	0.826884
39.1	249.0	19.6274	1.2865	0.01746	0.826588
39.2	249.2	19.6789	1.2865	0.01746	0.826292
39.3	249.3	19.7305	1.2865	0.01747	0.825996
39.4	249.5	19.7821	1.2865	0.01747	0.825701
39.5	249.6	19.8337	1.2865	0.01748	0.825406
39.6	249.8	19.8854	1.2865	0.01749	0.825111
39.7	249.9	19.9370	1.2865	0.01749	0.824816
39.8	250.1	19.9887	1.2865	0.01750	0.824521
39.9	250.2	20.0404	1.2865	0.01750	0.824227

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
40	250.4	20.0921	1.2865	0.01751	0.823933
40.1	250.5	20.1438	1.2865	0.01751	0.823639
40.2	250.7	20.1955	1.2865	0.01752	0.823345
40.3	250.8	20.2473	1.2865	0.01752	0.823052
40.4	251.0	20.2990	1.2865	0.01753	0.822758
40.5	251.1	20.3508	1.2865	0.01754	0.822465
40.6	251.3	20.4026	1.2865	0.01754	0.822173
40.7	251.4	20.4545	1.2866	0.01755	0.821880
40.8	251.6	20.5063	1.2866	0.01755	0.821587
40.9	251.7	20.5582	1.2866	0.01756	0.821295
41	251.9	20.6100	1.2866	0.01756	0.821003
41.1	252.0	20.6619	1.2866	0.01757	0.820711
41.2	252.2	20.7138	1.2866	0.01757	0.820420
41.3	252.3	20.7658	1.2866	0.01758	0.820128
41.4	252.4	20.8177	1.2866	0.01759	0.819837
41.5	252.6	20.8697	1.2866	0.01759	0.819546
41.6	252.7	20.9217	1.2866	0.01760	0.819256
41.7	252.9	20.9737	1.2866	0.01760	0.818965
41.8	253.0	21.0257	1.2867	0.01761	0.818675
41.9	253.2	21.0777	1.2867	0.01761	0.818385
42	253.3	21.1298	1.2867	0.01762	0.818095
42.1	253.4	21.1819	1.2867	0.01762	0.817805
42.2	253.6	21.2339	1.2867	0.01763	0.817515
42.3	253.7	21.2861	1.2867	0.01763	0.817226
42.4	253.9	21.3382	1.2867	0.01764	0.816937
42.5	254.0	21.3903	1.2867	0.01764	0.816648
42.6	254.2	21.4425	1.2868	0.01765	0.816359
42.7	254.3	21.4947	1.2868	0.01766	0.816070
42.8	254.4	21.5469	1.2868	0.01766	0.815782
42.9	254.6	21.5991	1.2868	0.01767	0.815494
43	254.7	21.6513	1.2868	0.01767	0.815206
43.1	254.9	21.7036	1.2868	0.01768	0.814918
43.2	255.0	21.7558	1.2868	0.01768	0.814631
43.3	255.1	21.8081	1.2869	0.01769	0.814343
43.4	255.3	21.8604	1.2869	0.01769	0.814056
43.5	255.4	21.9128	1.2869	0.01770	0.813769
43.6	255.6	21.9651	1.2869	0.01770	0.813482
43.7	255.7	22.0175	1.2869	0.01771	0.813195
43.8	255.8	22.0699	1.2869	0.01771	0.812909
43.9	256.0	22.1223	1.2870	0.01772	0.812623
44	256.1	22.1747	1.2870	0.01772	0.812337
44.1	256.2	22.2271	1.2870	0.01773	0.812051
44.2	256.4	22.2796	1.2870	0.01774	0.811765
44.3	256.5	22.3321	1.2870	0.01774	0.811480

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
44.4	256.7	22.3845	1.2871	0.01775	0.811194
44.5	256.8	22.4371	1.2871	0.01775	0.810909
44.6	256.9	22.4896	1.2871	0.01776	0.810624
44.7	257.1	22.5421	1.2871	0.01776	0.810339
44.8	257.2	22.5947	1.2871	0.01777	0.810055
44.9	257.3	22.6473	1.2872	0.01777	0.809770
45	257.5	22.6999	1.2872	0.01778	0.809486
45.1	257.6	22.7525	1.2872	0.01778	0.809202
45.2	257.7	22.8052	1.2872	0.01779	0.808918
45.3	257.9	22.8579	1.2872	0.01779	0.808634
45.4	258.0	22.9105	1.2873	0.01780	0.808351
45.5	258.1	22.9632	1.2873	0.01780	0.808067
45.6	258.3	23.0160	1.2873	0.01781	0.807784
45.7	258.4	23.0687	1.2873	0.01781	0.807501
45.8	258.6	23.1215	1.2874	0.01782	0.807218
45.9	258.7	23.1742	1.2874	0.01782	0.806936
46	258.8	23.2270	1.2874	0.01783	0.806653
46.1	259.0	23.2799	1.2874	0.01783	0.806371
46.2	259.1	23.3327	1.2875	0.01784	0.806089
46.3	259.2	23.3856	1.2875	0.01784	0.805807
46.4	259.3	23.4384	1.2875	0.01785	0.805525
46.5	259.5	23.4913	1.2875	0.01786	0.805243
46.6	259.6	23.5442	1.2876	0.01786	0.804962
46.7	259.7	23.5972	1.2876	0.01787	0.804680
46.8	259.9	23.6501	1.2876	0.01787	0.804399
46.9	260.0	23.7031	1.2876	0.01788	0.804118
47	260.1	23.7561	1.2877	0.01788	0.803837
47.1	260.3	23.8091	1.2877	0.01789	0.803557
47.2	260.4	23.8621	1.2877	0.01789	0.803276
47.3	260.5	23.9152	1.2878	0.01790	0.802996
47.4	260.7	23.9683	1.2878	0.01790	0.802716
47.5	260.8	24.0214	1.2878	0.01791	0.802436
47.6	260.9	24.0745	1.2878	0.01791	0.802156
47.7	261.1	24.1276	1.2879	0.01792	0.801876
47.8	261.2	24.1808	1.2879	0.01792	0.801597
47.9	261.3	24.2339	1.2879	0.01793	0.801317
48	261.4	24.2871	1.2880	0.01793	0.801038
48.1	261.6	24.3403	1.2880	0.01794	0.800759
48.2	261.7	24.3936	1.2880	0.01794	0.800480
48.3	261.8	24.4468	1.2881	0.01795	0.800202
48.4	262.0	24.5001	1.2881	0.01795	0.799923
48.5	262.1	24.5534	1.2881	0.01796	0.799645
48.6	262.2	24.6067	1.2882	0.01796	0.799366
48.7	262.3	24.6600	1.2882	0.01797	0.799088

Pressure (bar absolute)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
48.8	262.5	24.7134	1.2882	0.01797	0.798810
48.9	262.6	24.7668	1.2883	0.01798	0.798533
49	262.7	24.8202	1.2883	0.01798	0.798255
49.1	262.8	24.8736	1.2883	0.01799	0.797978
49.2	263.0	24.9270	1.2884	0.01799	0.797700
49.3	263.1	24.9805	1.2884	0.01800	0.797423
49.4	263.2	25.0339	1.2884	0.01800	0.797146
49.5	263.4	25.0874	1.2885	0.01801	0.796869
49.6	263.5	25.1409	1.2885	0.01801	0.796593
49.7	263.6	25.1945	1.2885	0.01802	0.796316
49.8	263.7	25.2480	1.2886	0.01802	0.796040
49.9	263.852	25.3016	1.2886	0.01803	0.795763
50	263.977	25.3552	1.2887	0.01803	0.795487

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Table 1.1 Saturated Steam Data – Absolute Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Iseotropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
1	120.4	1.1359	1.3137	0.01297	0.97573
1.05	121.2	1.1622	1.3136	0.01300	0.97533
1.1	122.0	1.1886	1.3134	0.01302	0.97493
1.15	122.7	1.2149	1.3133	0.01305	0.97454
1.2	123.5	1.2412	1.3131	0.01308	0.97414
1.25	124.2	1.2674	1.3130	0.01310	0.97376
1.3	124.9	1.2936	1.3128	0.01312	0.97337
1.35	125.6	1.3198	1.3127	0.01315	0.97299
1.4	126.3	1.3460	1.3125	0.01317	0.97261
1.45	127.0	1.3721	1.3124	0.01320	0.97223
1.5	127.6	1.3981	1.3122	0.01322	0.97186
1.55	128.3	1.4242	1.3121	0.01324	0.97149
1.6	128.9	1.4502	1.3120	0.01326	0.97112
1.65	129.5	1.4762	1.3118	0.01328	0.97075
1.7	130.2	1.5022	1.3117	0.01331	0.97038
1.75	130.8	1.5281	1.3115	0.01333	0.97002
1.8	131.4	1.5540	1.3114	0.01335	0.96966
1.85	132.0	1.5799	1.3113	0.01337	0.96930
1.9	132.6	1.6057	1.3112	0.01339	0.96895
1.95	133.1	1.6316	1.3110	0.01341	0.96859
2	133.7	1.6574	1.3109	0.01343	0.96824
2.05	134.3	1.6832	1.3108	0.01345	0.96789
2.1	134.8	1.7089	1.3107	0.01347	0.96754
2.15	135.4	1.7347	1.3105	0.01349	0.96720
2.2	135.9	1.7604	1.3104	0.01350	0.96685
2.25	136.4	1.7861	1.3103	0.01352	0.96651
2.3	137.0	1.8117	1.3102	0.01354	0.96617
2.35	137.5	1.8374	1.3100	0.01356	0.96583
2.4	138.0	1.8630	1.3099	0.01358	0.96549
2.45	138.5	1.8886	1.3098	0.01359	0.96516
2.5	139.0	1.9142	1.3097	0.01361	0.96482
2.55	139.5	1.9398	1.3096	0.01363	0.96449
2.6	140.0	1.9653	1.3095	0.01365	0.96416
2.65	140.5	1.9909	1.3094	0.01366	0.96383
2.7	141.0	2.0164	1.3093	0.01368	0.96350
2.75	141.5	2.0419	1.3091	0.01370	0.96318
2.8	141.9	2.0674	1.3090	0.01371	0.96285
2.85	142.4	2.0928	1.3089	0.01373	0.96253
2.9	142.9	2.1183	1.3088	0.01374	0.96221
2.95	143.3	2.1437	1.3087	0.01376	0.96189
3	143.8	2.1691	1.3086	0.01378	0.96157
3.05	144.2	2.1945	1.3085	0.01379	0.96125
3.1	144.7	2.2199	1.3084	0.01381	0.96093
3.15	145.1	2.2452	1.3083	0.01382	0.96062

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Iseotropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
3.2	145.5	2.2706	1.3082	0.01384	0.96031
3.25	146.0	2.2959	1.3081	0.01385	0.95999
3.3	146.4	2.3213	1.3080	0.01387	0.95968
3.35	146.8	2.3466	1.3079	0.01388	0.95937
3.4	147.2	2.3718	1.3078	0.01390	0.95906
3.45	147.6	2.3971	1.3077	0.01391	0.95876
3.5	148.0	2.4224	1.3076	0.01392	0.95845
3.55	148.5	2.4476	1.3075	0.01394	0.95814
3.6	148.9	2.4729	1.3074	0.01395	0.95784
3.65	149.3	2.4981	1.3073	0.01397	0.95754
3.7	149.7	2.5233	1.3072	0.01398	0.95724
3.75	150.0	2.5485	1.3071	0.01399	0.95693
3.8	150.4	2.5737	1.3070	0.01401	0.95664
3.85	150.8	2.5989	1.3069	0.01402	0.95634
3.9	151.2	2.6240	1.3068	0.01403	0.95604
3.95	151.6	2.6492	1.3068	0.01405	0.95574
4	152.0	2.6743	1.3067	0.01406	0.95545
4.05	152.3	2.6994	1.3066	0.01407	0.95515
4.1	152.7	2.7246	1.3065	0.01408	0.95486
4.15	153.1	2.7497	1.3064	0.01410	0.95457
4.2	153.4	2.7748	1.3063	0.01411	0.95428
4.25	153.8	2.7998	1.3062	0.01412	0.95399
4.3	154.2	2.8249	1.3061	0.01413	0.95370
4.35	154.5	2.8500	1.3060	0.01415	0.95341
4.4	154.9	2.8750	1.3060	0.01416	0.95312
4.45	155.2	2.9001	1.3059	0.01417	0.95283
4.5	155.6	2.9251	1.3058	0.01418	0.95255
4.55	155.9	2.9501	1.3057	0.01420	0.95226
4.6	156.3	2.9751	1.3056	0.01421	0.95198
4.65	156.6	3.0001	1.3055	0.01422	0.95169
4.7	157.0	3.0251	1.3054	0.01423	0.95141
4.75	157.3	3.0501	1.3054	0.01424	0.95113
4.8	157.6	3.0751	1.3053	0.01425	0.95085
4.85	158.0	3.1001	1.3052	0.01427	0.95057
4.9	158.3	3.1250	1.3051	0.01428	0.95029
4.95	158.6	3.1500	1.3050	0.01429	0.95001
5	158.9	3.1749	1.3050	0.01430	0.94973
5.05	159.3	3.1998	1.3049	0.01431	0.94946
5.1	159.6	3.2248	1.3048	0.01432	0.94918
5.15	159.9	3.2497	1.3047	0.01433	0.94891
5.2	160.2	3.2746	1.3046	0.01434	0.94863
5.25	160.5	3.2995	1.3046	0.01435	0.94836
5.3	160.9	3.3244	1.3045	0.01437	0.94809
5.35	161.2	3.3493	1.3044	0.01438	0.94781

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
5.4	161.5	3.3742	1.3043	0.01439	0.94754
5.45	161.8	3.3990	1.3043	0.01440	0.94727
5.5	162.1	3.4239	1.3042	0.01441	0.94700
5.55	162.4	3.4487	1.3041	0.01442	0.94673
5.6	162.7	3.4736	1.3040	0.01443	0.94646
5.65	163.0	3.4984	1.3039	0.01444	0.94620
5.7	163.3	3.5233	1.3039	0.01445	0.94593
5.75	163.6	3.5481	1.3038	0.01446	0.94566
5.8	163.9	3.5729	1.3037	0.01447	0.94540
5.85	164.2	3.5977	1.3037	0.01448	0.94513
5.9	164.5	3.6225	1.3036	0.01449	0.94487
5.95	164.8	3.6473	1.3035	0.01450	0.94460
6	165.1	3.6721	1.3034	0.01451	0.94434
6.05	165.3	3.6969	1.3034	0.01452	0.94408
6.1	165.6	3.7217	1.3033	0.01453	0.94382
6.15	165.9	3.7465	1.3032	0.01454	0.94356
6.2	166.2	3.7712	1.3031	0.01455	0.94329
6.25	166.5	3.7960	1.3031	0.01456	0.94303
6.3	166.8	3.8208	1.3030	0.01457	0.94278
6.35	167.0	3.8455	1.3029	0.01458	0.94252
6.4	167.3	3.8703	1.3029	0.01459	0.94226
6.45	167.6	3.8950	1.3028	0.01460	0.94200
6.5	167.9	3.9197	1.3027	0.01461	0.94174
6.55	168.1	3.9445	1.3027	0.01462	0.94149
6.6	168.4	3.9692	1.3026	0.01463	0.94123
6.65	168.7	3.9939	1.3025	0.01463	0.94098
6.7	168.9	4.0186	1.3025	0.01464	0.94072
6.75	169.2	4.0433	1.3024	0.01465	0.94047
6.8	169.5	4.0680	1.3023	0.01466	0.94021
6.85	169.7	4.0927	1.3023	0.01467	0.93996
6.9	170.0	4.1174	1.3022	0.01468	0.93971
6.95	170.3	4.1421	1.3021	0.01469	0.93946
7	170.5	4.1668	1.3021	0.01470	0.93921
7.05	170.8	4.1915	1.3020	0.01471	0.93896
7.1	171.0	4.2162	1.3019	0.01472	0.93871
7.15	171.3	4.2408	1.3019	0.01472	0.93846
7.2	171.5	4.2655	1.3018	0.01473	0.93821
7.25	171.8	4.2902	1.3017	0.01474	0.93796
7.3	172.0	4.3148	1.3017	0.01475	0.93771
7.35	172.3	4.3395	1.3016	0.01476	0.93746
7.4	172.5	4.3641	1.3015	0.01477	0.93722
7.45	172.8	4.3888	1.3015	0.01478	0.93697
7.5	173.0	4.4134	1.3014	0.01479	0.93672
7.55	173.3	4.4380	1.3014	0.01479	0.93648

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
7.6	173.5	4.4627	1.3013	0.01480	0.93623
7.65	173.8	4.4873	1.3012	0.01481	0.93599
7.7	174.0	4.5119	1.3012	0.01482	0.93574
7.75	174.3	4.5365	1.3011	0.01483	0.93550
7.8	174.5	4.5612	1.3010	0.01484	0.93526
7.85	174.7	4.5858	1.3010	0.01484	0.93501
7.9	175.0	4.6104	1.3009	0.01485	0.93477
7.95	175.2	4.6350	1.3009	0.01486	0.93453
8	175.5	4.6596	1.3008	0.01487	0.93429
8.05	175.7	4.6842	1.3007	0.01488	0.93405
8.1	175.9	4.7088	1.3007	0.01488	0.93381
8.15	176.2	4.7334	1.3006	0.01489	0.93357
8.2	176.4	4.7580	1.3006	0.01490	0.93333
8.25	176.6	4.7826	1.3005	0.01491	0.93309
8.3	176.8	4.8071	1.3004	0.01492	0.93285
8.35	177.1	4.8317	1.3004	0.01492	0.93261
8.4	177.3	4.8563	1.3003	0.01493	0.93238
8.45	177.5	4.8809	1.3003	0.01494	0.93214
8.5	177.8	4.9054	1.3002	0.01495	0.93190
8.55	178.0	4.9300	1.3001	0.01496	0.93167
8.6	178.2	4.9546	1.3001	0.01496	0.93143
8.65	178.4	4.9791	1.3000	0.01497	0.93119
8.7	178.7	5.0037	1.3000	0.01498	0.93096
8.75	178.9	5.0282	1.2999	0.01499	0.93072
8.8	179.1	5.0528	1.2999	0.01499	0.93049
8.85	179.3	5.0774	1.2998	0.01500	0.93026
8.9	179.5	5.1019	1.2998	0.01501	0.93002
8.95	179.8	5.1264	1.2997	0.01502	0.92979
9	180.0	5.1510	1.2996	0.01502	0.92956
9.05	180.2	5.1755	1.2996	0.01503	0.92932
9.1	180.4	5.2001	1.2995	0.01504	0.92909
9.15	180.6	5.2246	1.2995	0.01505	0.92886
9.2	180.8	5.2491	1.2994	0.01505	0.92863
9.25	181.0	5.2737	1.2994	0.01506	0.92840
9.3	181.3	5.2982	1.2993	0.01507	0.92817
9.35	181.5	5.3227	1.2993	0.01508	0.92794
9.4	181.7	5.3472	1.2992	0.01508	0.92771
9.45	181.9	5.3718	1.2991	0.01509	0.92748
9.5	182.1	5.3963	1.2991	0.01510	0.92725
9.55	182.3	5.4208	1.2990	0.01510	0.92702
9.6	182.5	5.4453	1.2990	0.01511	0.92680
9.65	182.7	5.4698	1.2989	0.01512	0.92657
9.7	182.9	5.4943	1.2989	0.01513	0.92634
9.75	183.1	5.5188	1.2988	0.01513	0.92611

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
9.8	183.3	5.5434	1.2988	0.01514	0.92589
9.85	183.5	5.5679	1.2987	0.01515	0.92566
9.9	183.8	5.5924	1.2987	0.01515	0.92544
9.95	184.0	5.6169	1.2986	0.01516	0.92521
10	184.2	5.6414	1.2986	0.01517	0.92498
10.1	184.6	5.6904	1.2985	0.01518	0.92454
10.2	185.0	5.7393	1.2984	0.01520	0.92409
10.3	185.4	5.7883	1.2983	0.01521	0.92364
10.4	185.7	5.8373	1.2982	0.01522	0.92320
10.5	186.1	5.8863	1.2981	0.01524	0.92275
10.6	186.5	5.9352	1.2980	0.01525	0.92231
10.7	186.9	5.9842	1.2979	0.01526	0.92187
10.8	187.3	6.0332	1.2978	0.01528	0.92143
10.9	187.7	6.0821	1.2977	0.01529	0.92099
11	188.0	6.1310	1.2976	0.01530	0.92055
11.1	188.4	6.1800	1.2975	0.01531	0.92012
11.2	188.8	6.2289	1.2974	0.01533	0.91968
11.3	189.2	6.2779	1.2973	0.01534	0.91925
11.4	189.5	6.3268	1.2972	0.01535	0.91882
11.5	189.9	6.3757	1.2971	0.01537	0.91839
11.6	190.3	6.4246	1.2970	0.01538	0.91796
11.7	190.6	6.4735	1.2969	0.01539	0.91753
11.8	191.0	6.5225	1.2968	0.01540	0.91710
11.9	191.3	6.5714	1.2967	0.01541	0.91667
12	191.7	6.6203	1.2966	0.01543	0.91625
12.1	192.0	6.6692	1.2965	0.01544	0.91582
12.2	192.4	6.7181	1.2965	0.01545	0.91540
12.3	192.7	6.7670	1.2964	0.01546	0.91498
12.4	193.1	6.8159	1.2963	0.01548	0.91456
12.5	193.4	6.8648	1.2962	0.01549	0.91414
12.6	193.8	6.9137	1.2961	0.01550	0.91372
12.7	194.1	6.9626	1.2960	0.01551	0.91330
12.8	194.5	7.0115	1.2959	0.01552	0.91288
12.9	194.8	7.0604	1.2958	0.01553	0.91247
13	195.1	7.1093	1.2958	0.01555	0.91205
13.1	195.5	7.1582	1.2957	0.01556	0.91164
13.2	195.8	7.2071	1.2956	0.01557	0.91123
13.3	196.1	7.2560	1.2955	0.01558	0.91082
13.4	196.4	7.3049	1.2954	0.01559	0.91041
13.5	196.8	7.3538	1.2953	0.01560	0.91000
13.6	197.1	7.4027	1.2953	0.01561	0.90959
13.7	197.4	7.4516	1.2952	0.01562	0.90918
13.8	197.7	7.5005	1.2951	0.01564	0.90877
13.9	198.1	7.5494	1.2950	0.01565	0.90837

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
14	198.4	7.5983	1.2949	0.01566	0.90796
14.1	198.7	7.6472	1.2949	0.01567	0.90756
14.2	199.0	7.6961	1.2948	0.01568	0.90715
14.3	199.3	7.7450	1.2947	0.01569	0.90675
14.4	199.6	7.7939	1.2946	0.01570	0.90635
14.5	199.9	7.8428	1.2946	0.01571	0.90595
14.6	200.2	7.8918	1.2945	0.01572	0.90555
14.7	200.5	7.9407	1.2944	0.01573	0.90515
14.8	200.8	7.9896	1.2943	0.01574	0.90475
14.9	201.1	8.0385	1.2943	0.01575	0.90436
15	201.5	8.0874	1.2942	0.01576	0.90396
15.1	201.7	8.1364	1.2941	0.01577	0.90357
15.2	202.0	8.1853	1.2940	0.01578	0.90317
15.3	202.3	8.2342	1.2940	0.01579	0.90278
15.4	202.6	8.2831	1.2939	0.01581	0.90239
15.5	202.9	8.3321	1.2938	0.01582	0.90199
15.6	203.2	8.3810	1.2937	0.01583	0.90160
15.7	203.5	8.4300	1.2937	0.01584	0.90121
15.8	203.8	8.4789	1.2936	0.01585	0.90082
15.9	204.1	8.5279	1.2935	0.01586	0.90043
16	204.4	8.5768	1.2935	0.01587	0.90005
16.1	204.7	8.6258	1.2934	0.01588	0.89966
16.2	205.0	8.6747	1.2933	0.01589	0.89927
16.3	205.2	8.7237	1.2932	0.01590	0.89889
16.4	205.5	8.7727	1.2932	0.01590	0.89850
16.5	205.8	8.8217	1.2931	0.01591	0.89812
16.6	206.1	8.8706	1.2930	0.01592	0.89773
16.7	206.4	8.9196	1.2930	0.01593	0.89735
16.8	206.6	8.9686	1.2929	0.01594	0.89697
16.9	206.9	9.0176	1.2928	0.01595	0.89659
17	207.2	9.0666	1.2928	0.01596	0.89621
17.1	207.5	9.1156	1.2927	0.01597	0.89583
17.2	207.7	9.1646	1.2926	0.01598	0.89545
17.3	208.0	9.2137	1.2926	0.01599	0.89507
17.4	208.3	9.2627	1.2925	0.01600	0.89469
17.5	208.5	9.3117	1.2925	0.01601	0.89431
17.6	208.8	9.3607	1.2924	0.01602	0.89394
17.7	209.1	9.4098	1.2923	0.01603	0.89356
17.8	209.3	9.4588	1.2923	0.01604	0.89319
17.9	209.6	9.5079	1.2922	0.01605	0.89281
18	209.9	9.5569	1.2921	0.01606	0.89244
18.1	210.1	9.6060	1.2921	0.01607	0.89207
18.2	210.4	9.6551	1.2920	0.01607	0.89169
18.3	210.7	9.7041	1.2920	0.01608	0.89132

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
18.4	210.9	9.7532	1.2919	0.01609	0.89095
18.5	211.2	9.8023	1.2918	0.01610	0.89058
18.6	211.4	9.8514	1.2918	0.01611	0.89021
18.7	211.7	9.9005	1.2917	0.01612	0.88984
18.8	211.9	9.9496	1.2917	0.01613	0.88947
18.9	212.2	9.9987	1.2916	0.01614	0.88911
19	212.5	10.0478	1.2915	0.01615	0.88874
19.1	212.7	10.0970	1.2915	0.01615	0.88837
19.2	213.0	10.1461	1.2914	0.01616	0.88801
19.3	213.2	10.1952	1.2914	0.01617	0.88764
19.4	213.5	10.2444	1.2913	0.01618	0.88728
19.5	213.7	10.2936	1.2913	0.01619	0.88691
19.6	213.9	10.3427	1.2912	0.01620	0.88655
19.7	214.2	10.3919	1.2912	0.01621	0.88619
19.8	214.4	10.4411	1.2911	0.01622	0.88582
19.9	214.7	10.4903	1.2910	0.01622	0.88546
20	214.9	10.5395	1.2910	0.01623	0.88510
20.1	215.2	10.5887	1.2909	0.01624	0.88474
20.2	215.4	10.6379	1.2909	0.01625	0.88438
20.3	215.7	10.6871	1.2908	0.01626	0.88402
20.4	215.9	10.7363	1.2908	0.01627	0.88366
20.5	216.1	10.7856	1.2907	0.01627	0.88330
20.6	216.4	10.8348	1.2907	0.01628	0.88294
20.7	216.6	10.8841	1.2906	0.01629	0.88259
20.8	216.8	10.9333	1.2906	0.01630	0.88223
20.9	217.1	10.9826	1.2905	0.01631	0.88187
21	217.3	11.0319	1.2905	0.01632	0.88152
21.1	217.6	11.0812	1.2904	0.01632	0.88116
21.2	217.8	11.1305	1.2904	0.01633	0.88081
21.3	218.0	11.1798	1.2903	0.01634	0.88045
21.4	218.3	11.2291	1.2903	0.01635	0.88010
21.5	218.5	11.2784	1.2902	0.01636	0.87975
21.6	218.7	11.3277	1.2902	0.01636	0.87939
21.7	218.9	11.3771	1.2901	0.01637	0.87904
21.8	219.2	11.4264	1.2901	0.01638	0.87869
21.9	219.4	11.4758	1.2900	0.01639	0.87834
22	219.6	11.5252	1.2900	0.01640	0.87799
22.1	219.9	11.5745	1.2899	0.01640	0.87764
22.2	220.1	11.6239	1.2899	0.01641	0.87729
22.3	220.3	11.6733	1.2898	0.01642	0.87694
22.4	220.5	11.7227	1.2898	0.01643	0.87659
22.5	220.8	11.7721	1.2897	0.01644	0.87624
22.6	221.0	11.8216	1.2897	0.01644	0.87589
22.7	221.2	11.8710	1.2897	0.01645	0.87555

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
22.8	221.4	11.9204	1.2896	0.01646	0.87520
22.9	221.6	11.9699	1.2896	0.01647	0.87486
23	221.9	12.0194	1.2895	0.01648	0.87451
23.1	222.1	12.0688	1.2895	0.01648	0.87417
23.2	222.3	12.1183	1.2894	0.01649	0.87382
23.3	222.5	12.1678	1.2894	0.01650	0.87348
23.4	222.7	12.2173	1.2894	0.01651	0.87313
23.5	222.9	12.2668	1.2893	0.01651	0.87279
23.6	223.2	12.3164	1.2893	0.01652	0.87245
23.7	223.4	12.3659	1.2892	0.01653	0.87211
23.8	223.6	12.4155	1.2892	0.01654	0.87176
23.9	223.8	12.4650	1.2891	0.01654	0.87142
24	224.0	12.5146	1.2891	0.01655	0.87108
24.1	224.2	12.5642	1.2891	0.01656	0.87074
24.2	224.4	12.6138	1.2890	0.01657	0.87040
24.3	224.7	12.6634	1.2890	0.01657	0.87006
24.4	224.9	12.7130	1.2889	0.01658	0.86972
24.5	225.1	12.7626	1.2889	0.01659	0.86938
24.6	225.3	12.8122	1.2889	0.01660	0.86905
24.7	225.5	12.8619	1.2888	0.01660	0.86871
24.8	225.7	12.9115	1.2888	0.01661	0.86837
24.9	225.9	12.9612	1.2888	0.01662	0.86803
25	226.1	13.0109	1.2887	0.01663	0.86770
25.1	226.3	13.0606	1.2887	0.01663	0.86736
25.2	226.5	13.1103	1.2886	0.01664	0.86702
25.3	226.7	13.1600	1.2886	0.01665	0.86669
25.4	226.9	13.2097	1.2886	0.01665	0.86635
25.5	227.1	13.2594	1.2885	0.01666	0.86602
25.6	227.3	13.3092	1.2885	0.01667	0.86569
25.7	227.5	13.3589	1.2885	0.01668	0.86535
25.8	227.7	13.4087	1.2884	0.01668	0.86502
25.9	227.9	13.4585	1.2884	0.01669	0.86469
26	228.1	13.5083	1.2884	0.01670	0.86435
26.1	228.3	13.5581	1.2883	0.01670	0.86402
26.2	228.5	13.6079	1.2883	0.01671	0.86369
26.3	228.7	13.6577	1.2883	0.01672	0.86336
26.4	228.9	13.7076	1.2882	0.01673	0.86303
26.5	229.1	13.7574	1.2882	0.01673	0.86270
26.6	229.3	13.8073	1.2882	0.01674	0.86237
26.7	229.5	13.8572	1.2881	0.01675	0.86204
26.8	229.7	13.9070	1.2881	0.01675	0.86171
26.9	229.9	13.9570	1.2881	0.01676	0.86138
27	230.1	14.0069	1.2880	0.01677	0.86105
27.1	230.3	14.0568	1.2880	0.01677	0.86072

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
27.2	230.5	14.1067	1.2880	0.01678	0.86039
27.3	230.7	14.1567	1.2879	0.01679	0.86007
27.4	230.9	14.2066	1.2879	0.01680	0.85974
27.5	231.1	14.2566	1.2879	0.01680	0.85941
27.6	231.3	14.3066	1.2879	0.01681	0.85909
27.7	231.5	14.3566	1.2878	0.01682	0.85876
27.8	231.7	14.4066	1.2878	0.01682	0.85843
27.9	231.9	14.4566	1.2878	0.01683	0.85811
28	232.0	14.5067	1.2877	0.01684	0.85778
28.1	232.2	14.5567	1.2877	0.01684	0.85746
28.2	232.4	14.6068	1.2877	0.01685	0.85714
28.3	232.6	14.6569	1.2877	0.01686	0.85681
28.4	232.8	14.7070	1.2876	0.01686	0.85649
28.5	233.0	14.7571	1.2876	0.01687	0.85616
28.6	233.2	14.8072	1.2876	0.01688	0.85584
28.7	233.4	14.8573	1.2876	0.01688	0.85552
28.8	233.5	14.9075	1.2875	0.01689	0.85520
28.9	233.7	14.9576	1.2875	0.01690	0.85488
29	233.9	15.0078	1.2875	0.01690	0.85455
29.1	234.1	15.0580	1.2874	0.01691	0.85423
29.2	234.3	15.1082	1.2874	0.01692	0.85391
29.3	234.5	15.1584	1.2874	0.01692	0.85359
29.4	234.7	15.2086	1.2874	0.01693	0.85327
29.5	234.8	15.2588	1.2874	0.01694	0.85295
29.6	235.0	15.3091	1.2873	0.01694	0.85263
29.7	235.2	15.3593	1.2873	0.01695	0.85231
29.8	235.4	15.4096	1.2873	0.01696	0.85200
29.9	235.6	15.4599	1.2873	0.01696	0.85168
30	235.7	15.5102	1.2872	0.01697	0.85136
30.1	235.9	15.5605	1.2872	0.01698	0.85104
30.2	236.1	15.6109	1.2872	0.01698	0.85072
30.3	236.3	15.6612	1.2872	0.01699	0.85041
30.4	236.5	15.7116	1.2872	0.01700	0.85009
30.5	236.6	15.7619	1.2871	0.01700	0.84977
30.6	236.8	15.8123	1.2871	0.01701	0.84946
30.7	237.0	15.8627	1.2871	0.01701	0.84914
30.8	237.2	15.9131	1.2871	0.01702	0.84883
30.9	237.3	15.9636	1.2871	0.01703	0.84851
31	237.5	16.0140	1.2870	0.01703	0.84820
31.1	237.7	16.0645	1.2870	0.01704	0.84788
31.2	237.9	16.1149	1.2870	0.01705	0.84757
31.3	238.0	16.1654	1.2870	0.01705	0.84725
31.4	238.2	16.2159	1.2870	0.01706	0.84694
31.5	238.4	16.2664	1.2869	0.01707	0.84663

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
31.6	238.6	16.3170	1.2869	0.01707	0.84631
31.7	238.7	16.3675	1.2869	0.01708	0.84600
31.8	238.9	16.4181	1.2869	0.01708	0.84569
31.9	239.1	16.4687	1.2869	0.01709	0.84538
32	239.3	16.5192	1.2869	0.01710	0.84506
32.1	239.4	16.5698	1.2868	0.01710	0.84475
32.2	239.6	16.6205	1.2868	0.01711	0.84444
32.3	239.8	16.6711	1.2868	0.01712	0.84413
32.4	239.9	16.7217	1.2868	0.01712	0.84382
32.5	240.1	16.7724	1.2868	0.01713	0.84351
32.6	240.3	16.8231	1.2868	0.01713	0.84320
32.7	240.5	16.8738	1.2868	0.01714	0.84289
32.8	240.6	16.9245	1.2867	0.01715	0.84258
32.9	240.8	16.9752	1.2867	0.01715	0.84227
33	241.0	17.0259	1.2867	0.01716	0.84196
33.1	241.1	17.0767	1.2867	0.01716	0.84165
33.2	241.3	17.1274	1.2867	0.01717	0.84134
33.3	241.5	17.1782	1.2867	0.01718	0.84104
33.4	241.6	17.2290	1.2867	0.01718	0.84073
33.5	241.8	17.2798	1.2867	0.01719	0.84042
33.6	242.0	17.3306	1.2867	0.01720	0.84011
33.7	242.1	17.3815	1.2866	0.01720	0.83981
33.8	242.3	17.4323	1.2866	0.01721	0.83950
33.9	242.5	17.4832	1.2866	0.01721	0.83919
34	242.6	17.5341	1.2866	0.01722	0.83889
34.1	242.8	17.5850	1.2866	0.01723	0.83858
34.2	242.9	17.6359	1.2866	0.01723	0.83827
34.3	243.1	17.6869	1.2866	0.01724	0.83797
34.4	243.3	17.7378	1.2866	0.01724	0.83766
34.5	243.4	17.7888	1.2866	0.01725	0.83736
34.6	243.6	17.8398	1.2866	0.01726	0.83705
34.7	243.8	17.8908	1.2865	0.01726	0.83675
34.8	243.9	17.9418	1.2865	0.01727	0.83645
34.9	244.1	17.9928	1.2865	0.01727	0.83614
35	244.2	18.0438	1.2865	0.01728	0.83584
35.1	244.4	18.0949	1.2865	0.01729	0.83553
35.2	244.6	18.1460	1.2865	0.01729	0.83523
35.3	244.7	18.1971	1.2865	0.01730	0.83493
35.4	244.9	18.2482	1.2865	0.01730	0.83463
35.5	245.0	18.2993	1.2865	0.01731	0.83432
35.6	245.2	18.3504	1.2865	0.01731	0.83402
35.7	245.4	18.4016	1.2865	0.01732	0.83372
35.8	245.5	18.4527	1.2865	0.01733	0.83342
35.9	245.7	18.5039	1.2865	0.01733	0.83312

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
36	245.8	18.5551	1.2865	0.01734	0.83282
36.1	246.0	18.6064	1.2865	0.01734	0.83252
36.2	246.1	18.6576	1.2865	0.01735	0.83221
36.3	246.3	18.7088	1.2865	0.01736	0.83191
36.4	246.5	18.7601	1.2865	0.01736	0.83161
36.5	246.6	18.8114	1.2865	0.01737	0.83131
36.6	246.8	18.8627	1.2865	0.01737	0.83102
36.7	246.9	18.9140	1.2865	0.01738	0.83072
36.8	247.1	18.9653	1.2865	0.01738	0.83042
36.9	247.2	19.0167	1.2865	0.01739	0.83012
37	247.4	19.0681	1.2865	0.01740	0.82982
37.1	247.5	19.1194	1.2865	0.01740	0.82952
37.2	247.7	19.1708	1.2865	0.01741	0.82922
37.3	247.9	19.2223	1.2865	0.01741	0.82892
37.4	248.0	19.2737	1.2865	0.01742	0.82863
37.5	248.2	19.3251	1.2865	0.01742	0.82833
37.6	248.3	19.3766	1.2865	0.01743	0.82803
37.7	248.5	19.4281	1.2865	0.01744	0.82774
37.8	248.6	19.4796	1.2865	0.01744	0.82744
37.9	248.8	19.5311	1.2865	0.01745	0.82714
38	248.9	19.5826	1.2865	0.01745	0.82685
38.1	249.1	19.6342	1.2865	0.01746	0.82655
38.2	249.2	19.6858	1.2865	0.01746	0.82625
38.3	249.4	19.7373	1.2865	0.01747	0.82596
38.4	249.5	19.7889	1.2865	0.01748	0.82566
38.5	249.7	19.8406	1.2865	0.01748	0.82537
38.6	249.8	19.8922	1.2865	0.01749	0.82507
38.7	250.0	19.9439	1.2865	0.01749	0.82478
38.8	250.1	19.9955	1.2865	0.01750	0.82448
38.9	250.3	20.0472	1.2865	0.01750	0.82419
39	250.4	20.0989	1.2865	0.01751	0.82389
39.1	250.6	20.1506	1.2865	0.01751	0.82360
39.2	250.7	20.2024	1.2865	0.01752	0.82331
39.3	250.9	20.2541	1.2865	0.01753	0.82301
39.4	251.0	20.3059	1.2865	0.01753	0.82272
39.5	251.1	20.3577	1.2865	0.01754	0.82243
39.6	251.3	20.4095	1.2865	0.01754	0.82213
39.7	251.4	20.4613	1.2866	0.01755	0.82184
39.8	251.6	20.5132	1.2866	0.01755	0.82155
39.9	251.7	20.5650	1.2866	0.01756	0.82126
40	251.9	20.6169	1.2866	0.01756	0.82097
40.1	252.0	20.6688	1.2866	0.01757	0.82067
40.2	252.2	20.7207	1.2866	0.01757	0.82038
40.3	252.3	20.7727	1.2866	0.01758	0.82009

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
40.4	252.5	20.8246	1.2866	0.01759	0.81980
40.5	252.6	20.8766	1.2866	0.01759	0.81951
40.6	252.7	20.9286	1.2866	0.01760	0.81922
40.7	252.9	20.9806	1.2866	0.01760	0.81893
40.8	253.0	21.0326	1.2867	0.01761	0.81864
40.9	253.2	21.0846	1.2867	0.01761	0.81835
41	253.3	21.1367	1.2867	0.01762	0.81806
41.1	253.5	21.1888	1.2867	0.01762	0.81777
41.2	253.6	21.2408	1.2867	0.01763	0.81748
41.3	253.7	21.2930	1.2867	0.01763	0.81719
41.4	253.9	21.3451	1.2867	0.01764	0.81690
41.5	254.0	21.3972	1.2867	0.01765	0.81661
41.6	254.2	21.4494	1.2868	0.01765	0.81632
41.7	254.3	21.5016	1.2868	0.01766	0.81603
41.8	254.5	21.5538	1.2868	0.01766	0.81574
41.9	254.6	21.6060	1.2868	0.01767	0.81546
42	254.7	21.6582	1.2868	0.01767	0.81517
42.1	254.9	21.7105	1.2868	0.01768	0.81488
42.2	255.0	21.7628	1.2868	0.01768	0.81459
42.3	255.2	21.8151	1.2869	0.01769	0.81431
42.4	255.3	21.8674	1.2869	0.01769	0.81402
42.5	255.4	21.9197	1.2869	0.01770	0.81373
42.6	255.6	21.9721	1.2869	0.01770	0.81344
42.7	255.7	22.0244	1.2869	0.01771	0.81316
42.8	255.8	22.0768	1.2869	0.01772	0.81287
42.9	256.0	22.1292	1.2870	0.01772	0.81259
43	256.1	22.1816	1.2870	0.01773	0.81230
43.1	256.3	22.2341	1.2870	0.01773	0.81201
43.2	256.4	22.2865	1.2870	0.01774	0.81173
43.3	256.5	22.3390	1.2870	0.01774	0.81144
43.4	256.7	22.3915	1.2871	0.01775	0.81116
43.5	256.8	22.4440	1.2871	0.01775	0.81087
43.6	256.9	22.4966	1.2871	0.01776	0.81059
43.7	257.1	22.5491	1.2871	0.01776	0.81030
43.8	257.2	22.6017	1.2871	0.01777	0.81002
43.9	257.4	22.6543	1.2872	0.01777	0.80973
44	257.5	22.7069	1.2872	0.01778	0.80945
44.1	257.6	22.7595	1.2872	0.01778	0.80916
44.2	257.8	22.8122	1.2872	0.01779	0.80888
44.3	257.9	22.8648	1.2872	0.01779	0.80860
44.4	258.0	22.9175	1.2873	0.01780	0.80831
44.5	258.2	22.9702	1.2873	0.01780	0.80803
44.6	258.3	23.0229	1.2873	0.01781	0.80775
44.7	258.4	23.0757	1.2873	0.01781	0.80746

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
44.8	258.6	23.1285	1.2874	0.01782	0.80718
44.9	258.7	23.1812	1.2874	0.01782	0.80690
45	258.8	23.2340	1.2874	0.01783	0.80662
45.1	259.0	23.2869	1.2874	0.01784	0.80633
45.2	259.1	23.3397	1.2875	0.01784	0.80605
45.3	259.2	23.3926	1.2875	0.01785	0.80577
45.4	259.4	23.4454	1.2875	0.01785	0.80549
45.5	259.5	23.4983	1.2875	0.01786	0.80521
45.6	259.6	23.5513	1.2876	0.01786	0.80492
45.7	259.8	23.6042	1.2876	0.01787	0.80464
45.8	259.9	23.6572	1.2876	0.01787	0.80436
45.9	260.0	23.7101	1.2876	0.01788	0.80408
46	260.2	23.7631	1.2877	0.01788	0.80380
46.1	260.3	23.8161	1.2877	0.01789	0.80352
46.2	260.4	23.8692	1.2877	0.01789	0.80324
46.3	260.5	23.9222	1.2878	0.01790	0.80296
46.4	260.7	23.9753	1.2878	0.01790	0.80268
46.5	260.8	24.0284	1.2878	0.01791	0.80240
46.6	260.9	24.0815	1.2878	0.01791	0.80212
46.7	261.1	24.1347	1.2879	0.01792	0.80184
46.8	261.2	24.1878	1.2879	0.01792	0.80156
46.9	261.3	24.2410	1.2879	0.01793	0.80128
47	261.5	24.2942	1.2880	0.01793	0.80100
47.1	261.6	24.3474	1.2880	0.01794	0.80072
47.2	261.7	24.4006	1.2880	0.01794	0.80044
47.3	261.8	24.4539	1.2881	0.01795	0.80017
47.4	262.0	24.5072	1.2881	0.01795	0.79989
47.5	262.1	24.5605	1.2881	0.01796	0.79961
47.6	262.2	24.6138	1.2882	0.01796	0.79933
47.7	262.4	24.6671	1.2882	0.01797	0.79905
47.8	262.5	24.7205	1.2882	0.01797	0.79877
47.9	262.6	24.7738	1.2883	0.01798	0.79850
48	262.7	24.8272	1.2883	0.01798	0.79822
48.1	262.9	24.8806	1.2883	0.01799	0.79794
48.2	263.0	24.9341	1.2884	0.01799	0.79766
48.3	263.1	24.9875	1.2884	0.01800	0.79739
48.4	263.2	25.0410	1.2884	0.01800	0.79711
48.5	263.4	25.0945	1.2885	0.01801	0.79683
48.6	263.5	25.1480	1.2885	0.01801	0.79656
48.7	263.6	25.2016	1.2886	0.01802	0.79628
48.8	263.7	25.2551	1.2886	0.01802	0.79600
48.9	263.9	25.3087	1.2886	0.01803	0.79573
49	264.0	25.3623	1.2887	0.01803	0.79545
49.1	264.1	25.4159	1.2887	0.01804	0.79518

Pressure (bar gauge)	Saturation Temperature (°C)	Density (kg/m ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
49.2	264.2	25.4696	1.2887	0.01804	0.79490
49.3	264.4	25.5232	1.2888	0.01805	0.79462
49.4	264.5	25.5769	1.2888	0.01805	0.79435
49.5	264.6	25.6306	1.2889	0.01806	0.79407
49.6	264.7	25.6843	1.2889	0.01806	0.79380
49.7	264.9	25.7381	1.2889	0.01807	0.79352
49.8	265.0	25.7919	1.2890	0.01807	0.79325
49.9	265.1	25.8456	1.2890	0.01808	0.79297
50	265.2	25.8995	1.2891	0.01808	0.79270

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Table 1.2 Saturated Steam Data – Gauge Pressure Values (Bar) (Continued)

Pressure (psi absolute)	Saturation Temperature (°F)	Density (lb/ft ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibilit y Factor
15	213.036	0.0380232	1.3176	0.01229	0.984454
20	227.969	0.0497636	1.3161	0.01257	0.981152
25	240.085	0.0613169	1.3147	0.01280	0.978119
30	250.354	0.0727268	1.3136	0.01300	0.975286
35	259.308	0.0840219	1.3125	0.01317	0.972609
40	267.275	0.0952223	1.3116	0.01332	0.970059
45	274.471	0.106343	1.3107	0.01346	0.967615
50	281.047	0.117395	1.3099	0.01359	0.965263
55	287.111	0.128369	1.3091	0.01371	0.962989
60	292.747	0.13933	1.3084	0.01381	0.960785
65	298.017	0.150226	1.3077	0.01391	0.958643
70	302.971	0.161082	1.3070	0.01401	0.956557
75	307.649	0.171901	1.3064	0.01410	0.954521
80	312.084	0.182688	1.3058	0.01418	0.952531
85	316.302	0.193446	1.3052	0.01427	0.950584
90	320.328	0.204178	1.3047	0.01434	0.948676
95	324.179	0.214887	1.3041	0.01442	0.946803
100	327.871	0.225574	1.3036	0.01449	0.944965
105	331.42	0.236242	1.3031	0.01455	0.943158
110	334.838	0.246892	1.3026	0.01462	0.94138
115	338.134	0.257527	1.3022	0.01468	0.93963
120	341.319	0.268148	1.3017	0.01474	0.937906
125	344.4	0.278755	1.3013	0.01480	0.936206
130	347.386	0.289351	1.3009	0.01486	0.93453
135	350.282	0.299936	1.3004	0.01492	0.932876
140	353.094	0.310512	1.3000	0.01497	0.931243
145	355.829	0.32108	1.2997	0.01502	0.92963
150	358.49	0.33164	1.2993	0.01507	0.928036
155	361.083	0.342193	1.2989	0.01512	0.92646
160	363.61	0.35274	1.2985	0.01517	0.924902
165	366.076	0.363283	1.2982	0.01522	0.92336
170	368.484	0.373821	1.2979	0.01526	0.921834
175	370.837	0.384355	1.2975	0.01531	0.920324
180	373.138	0.394886	1.2972	0.01535	0.918828
185	375.39	0.405414	1.2969	0.01540	0.917347
190	377.594	0.415941	1.2966	0.01544	0.915879
195	379.753	0.426466	1.2963	0.01548	0.914424
200	381.869	0.43699	1.2960	0.01552	0.912983
205	383.945	0.447513	1.2957	0.01556	0.911553
210	385.981	0.458037	1.2954	0.01560	0.910135
215	387.98	0.468561	1.2951	0.01564	0.908729
220	389.943	0.479085	1.2948	0.01567	0.907334
225	391.871	0.489611	1.2946	0.01571	0.90595
230	393.766	0.500138	1.2943	0.01575	0.904576

Pressure (psi absolute)	Saturation Temperature (°F)	Density (lb/ft ³)	Isetropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibilit y Factor
235	395.629	0.510667	1.2940	0.01578	0.903213
240	397.462	0.521199	1.2938	0.01582	0.901859
245	399.265	0.531732	1.2935	0.01585	0.900515
250	401.04	0.542269	1.2933	0.01589	0.89918
255	402.787	0.552809	1.2931	0.01592	0.897854
260	404.508	0.563352	1.2928	0.01595	0.896537
265	406.204	0.5739	1.2926	0.01599	0.895228
270	407.874	0.584451	1.2924	0.01602	0.893928
275	409.521	0.595006	1.2922	0.01605	0.892636
280	411.145	0.605566	1.2920	0.01608	0.891352
285	412.746	0.616131	1.2918	0.01611	0.890075
290	414.326	0.6267	1.2916	0.01614	0.888806
295	415.885	0.637275	1.2914	0.01617	0.887544
300	417.423	0.647855	1.2912	0.01620	0.88629
305	418.942	0.658441	1.2910	0.01623	0.885042
310	420.442	0.669033	1.2908	0.01626	0.883801
315	421.923	0.679631	1.2906	0.01629	0.882567
320	423.386	0.690235	1.2904	0.01632	0.88134
325	424.831	0.700846	1.2903	0.01635	0.880118
330	426.259	0.711463	1.2901	0.01638	0.878903
335	427.671	0.722087	1.2899	0.01640	0.877694
340	429.066	0.732718	1.2898	0.01643	0.876491
345	430.446	0.743356	1.2896	0.01646	0.875294
350	431.81	0.754002	1.2895	0.01648	0.874103
355	433.159	0.764655	1.2893	0.01651	0.872917
360	434.494	0.775315	1.2892	0.01654	0.871737
365	435.814	0.785984	1.2890	0.01656	0.870562
370	437.121	0.79666	1.2889	0.01659	0.869392
375	438.414	0.807345	1.2888	0.01661	0.868228
380	439.693	0.818038	1.2886	0.01664	0.867068
385	440.96	0.828739	1.2885	0.01666	0.865914
390	442.215	0.839449	1.2884	0.01669	0.864764
395	443.456	0.850168	1.2883	0.01671	0.863619
400	444.686	0.860895	1.2882	0.01674	0.862479
405	445.904	0.871632	1.2881	0.01676	0.861343
410	447.111	0.882377	1.2880	0.01679	0.860212
415	448.306	0.893132	1.2879	0.01681	0.859085
420	449.49	0.903896	1.2878	0.01683	0.857963
425	450.664	0.91467	1.2877	0.01686	0.856845
430	451.827	0.925453	1.2876	0.01688	0.855731
435	452.979	0.936246	1.2875	0.01690	0.854621
440	454.122	0.947049	1.2874	0.01693	0.853516
445	455.254	0.957861	1.2873	0.01695	0.852414
450	456.377	0.968684	1.2872	0.01697	0.851316

Table 1.3 Saturated Steam Data – Absolute Pressure Values (psi)

Table 1.3 Saturated Steam Data – Absolute Pressure Values (psi) (Continued)

Pressure (psi absolute)	Saturation Temperature (°F)	Density (lb/ft ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
455	457.49	0.979517	1.2872	0.01699	0.850223
460	458.594	0.990361	1.2871	0.01701	0.849132
465	459.688	1.00121	1.2870	0.01704	0.848046
470	460.774	1.01208	1.2870	0.01706	0.846963
475	461.85	1.02295	1.2869	0.01708	0.845884
480	462.919	1.03384	1.2869	0.01710	0.844809
485	463.978	1.04474	1.2868	0.01712	0.843737
490	465.029	1.05564	1.2868	0.01714	0.842668
495	466.072	1.06656	1.2867	0.01717	0.841603
500	467.107	1.07749	1.2867	0.01719	0.840541
505	468.134	1.08843	1.2866	0.01721	0.839482
510	469.154	1.09939	1.2866	0.01723	0.838427
515	470.165	1.11035	1.2866	0.01725	0.837374
520	471.169	1.12133	1.2865	0.01727	0.836325
525	472.166	1.13231	1.2865	0.01729	0.835279
530	473.156	1.14331	1.2865	0.01731	0.834236
535	474.138	1.15432	1.2865	0.01733	0.833196
540	475.113	1.16535	1.2865	0.01735	0.832159
545	476.082	1.17638	1.2865	0.01737	0.831125
550	477.044	1.18743	1.2865	0.01739	0.830094
555	477.999	1.19849	1.2865	0.01741	0.829065
560	478.947	1.20956	1.2865	0.01743	0.828039
565	479.889	1.22064	1.2865	0.01745	0.827016
570	480.825	1.23174	1.2865	0.01747	0.825996
575	481.754	1.24285	1.2865	0.01749	0.824978
580	482.677	1.25397	1.2865	0.01751	0.823963
585	483.594	1.26511	1.2865	0.01753	0.822951
590	484.505	1.27625	1.2865	0.01755	0.821941
595	485.411	1.28741	1.2866	0.01756	0.820934
600	486.31	1.29859	1.2866	0.01758	0.819929
605	487.204	1.30977	1.2866	0.01760	0.818926
610	488.092	1.32098	1.2867	0.017621	0.817926
615	488.974	1.33219	1.2867	0.01764	0.816929
620	489.851	1.34342	1.2868	0.01766	0.815934
625	490.723	1.35466	1.2868	0.01768	0.814941
630	491.589	1.36591	1.2869	0.01770	0.81395
635	492.451	1.37718	1.2869	0.01771	0.812961
640	493.306	1.38846	1.2870	0.01773	0.811975
645	494.157	1.39976	1.2871	0.01775	0.810991
650	495.003	1.41106	1.2871	0.01777	0.810009
655	495.844	1.42239	1.2872	0.01779	0.80903
660	496.68	1.43373	1.2873	0.01780	0.808052
665	497.511	1.44508	1.2874	0.01782	0.807076
670	498.337	1.45644	1.2875	0.01784	0.806103

Pressure (psi absolute)	Saturation Temperature (°F)	Density (lb/ft ³)	Isentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
675	499.159	1.46782	1.2875	0.01786	0.805132
680	499.976	1.47922	1.2876	0.01787	0.804162
685	500.788	1.49063	1.2877	0.01789	0.803195
690	501.596	1.50205	1.2878	0.01791	0.802229
695	502.4	1.51349	1.2879	0.01793	0.801266
700	503.199	1.52495	1.2881	0.01795	0.800304

Table 1.3 Saturated Steam Data – Absolute Pressure Values (psi) (Continued)

Table 1.3 Saturated Steam Data – Absolute Pressure Values (psi) (Continued)

Pressure (psi gauge)	Saturation Temperature (°F)	Density (lb/ft ³)	Isoentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
440	457.422	0.978858	1.28716	0.0169911	0.850289
445	458.527	0.989701	1.28709	0.0170133	0.849199
450	459.622	1.00055	1.28703	0.0170353	0.848112
455	460.708	1.01142	1.28697	0.0170572	0.847029
460	461.785	1.02229	1.28691	0.0170789	0.84595
465	462.854	1.03318	1.28685	0.0171005	0.844874
470	463.914	1.04407	1.2868	0.0171219	0.843802
475	464.966	1.05498	1.28675	0.0171432	0.842733
480	466.009	1.0659	1.28671	0.0171644	0.841667
485	467.045	1.07683	1.28666	0.0171855	0.840605
490	468.072	1.08777	1.28663	0.0172064	0.839546
495	469.092	1.09872	1.28659	0.0172271	0.838491
500	470.104	1.10968	1.28656	0.0172478	0.837438
505	471.109	1.12066	1.28654	0.0172683	0.836389
510	472.106	1.13164	1.28651	0.0172888	0.835343
515	473.096	1.14264	1.28649	0.0173091	0.8343
520	474.079	1.15365	1.28648	0.0173292	0.833259
525	475.054	1.16467	1.28646	0.0173493	0.832222
530	476.023	1.17571	1.28646	0.0173693	0.831188
535	476.985	1.18676	1.28645	0.0173891	0.830156
540	477.941	1.19781	1.28645	0.0174089	0.829128
545	478.89	1.20888	1.28645	0.0174285	0.828102
550	479.832	1.21997	1.28646	0.0174481	0.827078
555	480.768	1.23106	1.28647	0.0174675	0.826058
560	481.698	1.24217	1.28648	0.0174869	0.82504
565	482.621	1.25329	1.2865	0.0175062	0.824025
570	483.539	1.26443	1.28652	0.0175253	0.823012
575	484.45	1.27558	1.28654	0.0175444	0.822002
580	485.356	1.28674	1.28657	0.0175634	0.820995
585	486.256	1.29791	1.2866	0.0175823	0.81999
590	487.15	1.30909	1.28664	0.0176011	0.818987
595	488.038	1.32029	1.28668	0.0176198	0.817987
600	488.921	1.33151	1.28672	0.0176384	0.816989
605	489.798	1.34273	1.28677	0.017657	0.815994
610	490.67	1.35397	1.28682	0.0176755	0.815001
615	491.537	1.36523	1.28687	0.0176939	0.81401
620	492.398	1.37649	1.28693	0.0177122	0.813021
625	493.255	1.38777	1.28699	0.0177304	0.812035
630	494.106	1.39907	1.28706	0.0177486	0.811051
635	494.952	1.41038	1.28713	0.0177667	0.810069
640	495.793	1.4217	1.2872	0.0177847	0.809089
645	496.629	1.43304	1.28728	0.0178027	0.808111
650	497.461	1.44439	1.28736	0.0178206	0.807136
655	498.287	1.45575	1.28745	0.0178384	0.806162

Pressure (psi gauge)	Saturation Temperature (°F)	Density (lb/ft ³)	Isoentropic Exponent (κ)	Dynamic Viscosity (cPoise)	Expansibility Factor
660	499.109	1.46713	1.28753	0.0178562	0.805191
665	499.926	1.47853	1.28763	0.0178739	0.804221
670	500.739	1.48993	1.28772	0.0178915	0.803253
675	501.547	1.50136	1.28783	0.017909	0.802288
680	502.351	1.5128	1.28793	0.0179265	0.801324
685	503.15	1.52425	1.28804	0.017944	0.800362
690	503.945	1.53572	1.28815	0.0179614	0.799402
695	504.736	1.5472	1.28827	0.0179787	0.798444
700	505.522	1.5587	1.28839	0.0179959	0.797488

Table 1.4 Saturated Steam Data – Gauge Pressure Values (psi) (Continued)

Table 1.4 Saturated Steam Data – Gauge Pressure Values (psi) (Continued)

2 Gases

The following gases, together with many of their common physical properties, are contained in the application's internal database. The properties of a gas are displayed automatically in the appropriate parameter fields when that gas is selected in the 'Gas Component' field of the 'Fluid Data' screen – see IM/OM/SW Section 3.2.

1.1-Dichlorethane (C₂H₄Cl₂)

1.2-Butadiene (C₄H₆)

1.2-Dichloropropane (C₃H₆Cl₂)

1.3-Butadiene (C₄H₆)

Acetic Acid (C₂H₄O₂)

Acetone (CH₃-CO-CH₃)

Acetylene (C₂H₂)

Air

Ammonia (NH₃)

Argon (Ar)

Benzene (C₆H₆)

Butane (C₄H₁₀)

Butene / Butylene (C₄H₈)

Carbon Dioxide (CO₂)

Carbon Disulfide (CS₂)

Carbon Monoxide (CO)

Cetane (CH₂CO)

Chlorine (Cl₂)

Chlorobenzene (C₆H₅Cl)

Chloromethane (CH₃Cl)

Cyanogen Chloride (CNCl)

Diketone (C₄H₄O₂)

Dimethylamine (C₂H₇N)

Ethane (C₂H₆)

Ethanol (C₂H₅OH)

Ethene / Ethylene (C₂H₄)

Formaldehyde (CH₂O)

Helium (He)

Hexane (C₆H₁₄)

HM-Silane (SiCH₃Cl₃)

Hydrogen (H₂)

Hydrogen Chloride (HCl)

Hydrogen Sulfide (H₂S)

Krypton (Kr)

Lack-Silane (SiCH₃Cl₃)

Methane (CH₄)

Methanol (CH₃OH)

Methyl Ethyl Ketone (C₄H₈O)

Neon (Ne)

Nitric Oxide (NO)

Nitrogen (N₂)

Nitrous Oxide (N₂O)

Oxygen (O₂)

Ozone (O₃)

Pentane (C₅H₁₂)

Phosgene (COCl₂)

Phosphine (PH₃)

Propadiene (C₃H₄)

Propane (C₃H₈)

Propene / Propylene (C₃H₆)

Silicon Tetrachloride (SiCl₄)

Sulfur Dioxide (SO₂)

Sulfur Hexafluoride (SF₆)

Sulfur Trioxide (SO₃)

Tetrafluoroethane (C₂H₂F₄)

Toluene (C₇H₈)

Vinyl Chloride (C₂H₃Cl)

Water Vapor (H₂O)

Xenon (Xe)

PRODUCTS & CUSTOMER SUPPORT

Products

Automation Systems

- for the following industries:
 - Chemical & Pharmaceutical
 - Food & Beverage
 - Manufacturing
 - Metals and Minerals
 - Oil, Gas & Petrochemical
 - Pulp and Paper

Drives and Motors

- AC and DC Drives, AC and DC Machines, AC Motors to 1kV
- Drive Systems
- Force Measurement
- Servo Drives

Controllers & Recorders

- Single and Multi-loop Controllers
- Circular Chart and Strip Chart Recorders
- Paperless Recorders
- Process Indicators

Flexible Automation

- Industrial Robots and Robot Systems

Flow Measurement

- Electromagnetic Flowmeters
- Mass Flowmeters
- Turbine Flowmeters
- Wedge Flow Elements

Marine Systems & Turbochargers

- Electrical Systems
- Marine Equipment
- Offshore Retrofit and Refurbishment

Process Analytics

- Process Gas Analysis
- Systems Integration

Transmitters

- Pressure
- Temperature
- Level
- Interface Modules

Valves, Actuators and Positioners

- Control Valves
- Actuators
- Positioners

Water, Gas & Industrial Analytics Instrumentation

- pH, Conductivity and Dissolved Oxygen Transmitters and Sensors
- Ammonia, Nitrate, Phosphate, Silica, Sodium, Chloride, Fluoride, Dissolved Oxygen and Hydrazine Analyzers
- Zirconia Oxygen Analyzers, Katharometers, Hydrogen Purity and Purge-gas Monitors, Thermal Conductivity

Customer Support

We provide a comprehensive after sales service via a Worldwide Service Organization. Contact one of the following offices for details on your nearest Service and Repair Centre.

UK

ABB Limited
Tel: +44 (0)1946 830 611
Fax: +44 (0)1946 832 661

USA

ABB Inc.
Tel: +1 215 674 6000
Fax: +1 215 674 7183

Client Warranty

Prior to installation, the equipment referred to in this manual must be stored in a clean, dry environment, in accordance with the Company's published specification.

Periodic checks must be made on the equipment's condition. In the event of a failure under warranty, the following documentation must be provided as substantiation:

1. A listing evidencing process operation and alarm logs at time of failure.
2. Copies of all storage, installation, operating and maintenance records relating to the alleged faulty unit.

ABB has Sales & Customer Support expertise
in over 100 countries worldwide

www.abb.com

The Company's policy is one of continuous product
improvement and the right is reserved to modify the
information contained herein without notice.

Printed in UK (07.08)

© ABB 2008



ABB Limited

Salterbeck Trading Estate
Workington, Cumbria
CA14 5DS
UK
Tel: +44 (0)1946 830 611
Fax: +44 (0)1946 832 661

ABB Inc.

125 E. County Line Road
Warminster
PA 18974
USA
Tel:+1 215 674 6000
Fax:+1 215 674 7183