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Safety devices for protection against excessive pressure —

Part 7:
Common data

Dispositifs de sécurité pour protection contre les pressions excessives —

Partie 7: Données communes

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4126-7 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 185, *Safety devices for protection against excessive pressure*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European Standard..." to mean "...this International Standard...".

ISO 4126 consists of the following parts, under the general title *Safety devices for protection against excessive pressure*:

— *Part 1: Safety valves*

— *Part 2: Bursting disc safety devices*

— *Part 3: Safety valves and bursting disc safety devices in combination*

— *Part 4: Pilot-operated safety valves*

— *Part 5: Controlled safety pressure relief systems (CSPRS)*

— *Part 6: Application, selection and installation of bursting disc safety devices*

— *Part 7: Common data*

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Foreword

This document (EN ISO 4126-7:2004) has been prepared by Technical Committee CEN/TC 69 "Industrial valves", the secretariat of which is held by AFNOR, in collaboration with Technical Committee ISO/TC 185 "Safety devices for protection against excessive pressure".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2004 , and conflicting national standards shall be withdrawn at the latest by August 2004 .

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

This document includes a bibliography.

Annexes A and B are informative.

This European Standard for safety devices for protection against excessive pressure consists of seven parts of which this is part 7. The various parts are:

— *Part 1 : Safety valves*

— *Part 2 : Bursting disc safety devices*

— *Part 3 : Safety valves and bursting disc safety devices in combination*

— *Part 4 : Pilot operated safety valves*

— *Part 5 : Controlled Safety Pressure Relief Systems (CSPRS)*

— *Part 6 : Application, selection and installation of bursting disc safety devices*

— *Part 7 : Common data*

This Part 7 contains data, which is common to more than one of the parts of this standard to avoid unnecessary repetition. This part is referenced in the other parts of this standard where appropriate.

1 Scope

This Part of this standard contains data, which is common to more than one of the parts of this standard to avoid unnecessary repetition. This part is referenced in the other parts of this standard where appropriate.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 12516-1, *Industrial valves – Shell design strength – Part 1: Tabulation method for steel valve shells*.

ASTM A105/105M, *Specification for carbon steel forgings for piping applications.*

ASTM A106, *Specification for seamless carbon steel pipe for high-temperature service.*

ASTM A182/A182M, *Specification for forged or rolled alloy-steel pipe flanges, forged fittings and valves and parts for high temperature service.*

ASTM A203/A203M, *Specification for pressure vessel plates, Alloy steel, Nickel.*

ASTM A204/A204M, *Specification for pressure vessel plates, Alloy steel, Molybdenum*.

ASTM A216/A216M, *Specification for steel castings, Carbon suitable for fusion welding for high temperature service*.

ASTM A217/A217M, *Specification for steel castings, Martensitic stainless and alloy, For pressure containing parts suitable for high temperature service.*

ASTM A240/A240M, *Specification for chromium and chromium-nickel stainless steel plate, sheet and strip for pressure vessels and for general applications.*

ASTM A302/A302M, *Specification for pressure vessel plates, Alloy steel, Manganese-molybdenum and manganese-molybdenum—nickel.*

ASTM A312/A312M, *Specification for seamless and welded austenitic stainless steel pipes.*

ASTM A335/A335M, *Specification for seamless ferritic alloy-steel pipe for high temperature service.*

ASTM A350/A350M, *Specification for carbon and low alloy steel forgings, requiring notch toughness testing for piping components.*

ASTM A351/A351M, *Specification for castings, Austenitic, Austenitic-ferritic (duplex) for pressure containing parts.*

ASTM A352/A352M, *Specification for steel castings, Ferritic and martensitic, for pressure containing parts, Suitable for low-temperature service*.

ASTM A358/A358M, *Specification for electric-fusion-welded austenitic chromium-nickel alloy steel pipe for high temperature service.*

ASTM A369/A369M, *Specification for carbon and ferritic alloy steel forged and bored pipe for high-temperature service*.

ASTM A376/A376M, *Specification for seamless austenitic steel pipe for high-temperature central station service.*

ASTM A387/A387M, *Specification for pressure vessel plates, Alloy steel, Chromium-molybdeneum.*

ASTM A479/A479M, *Specification for stainless and steel bars and shapes for use in boilers and other pressure vessels.*

ASTM A515/A515M, *Specification for pressure vessel plates, Carbon steel, for intermediate and higher-temperature service.*

ASTM A516/A516M, *Specification for pressure vessel plates, Carbon steel, for moderate and lower-temperature service.*

ASTM A537/A537M, *Specification for pressure vessel plates, Heat-treated, Carbon-manganese-silicon steel.*

ASTM A672/A672M, *Specification for electric-fusion-welded steel pipe for high-pressure service at moderate temperatures.*

ASTM A675/A675M, *Specification for steel bars, Carbon, Hot-wrought, Special quality, Mechanical properties.*

ASTM A691/A691M, *Specification for carbon and alloy steel pipe, Electric fusion- welded for high pressure service at high temperature.*

ASTM A696/A696M, *Specification for steel bars, Carbon, Hot-wrought or cold-finished, Special quality, For pressure piping components.*

ASTM A739/A739M, *Specification for steel bars, Alloy, Hot-wrought, For elevated temperature or pressure-containing parts, Or both.*

ASTM A789/A789M, *Specification for seamless and welded ferritic/austenitic stainless steel tubing for general service.*

ASTM A790/A790M, *Specification for seamless and welded ferritic/austenitic stainless steel pipe.*

3   Non-European material groups and material temperature limitations

The temperature limitation of each ASTM material shall be as given in Table 5 and the choice of material groupings is explained in annex B.

For the purpose of determining the pressure temperature ratings for the pressure retaining components reference shall be made to prEN 12516-1.

Table 1 — Steam data

Pressure : 1-14 bar
Saturated : 220°C

Superheated steam temperature in degrees Celsius

PRESS Bar a.	SAT Temp C	Sat. steam	Temp >	100	110	120	130	140	150	160	170	180	190	200	210	220
1	99,63	1,6940	V	1,6960	1,7440	1,7930	1,8410	1,8890	1,9360	1,9640	2,0310	2,0780	2,1250	2,1720	2,2190	2,2660
		1,135	k	1,1350	1,1350	1,2266	1,3150	1,3150	1,3145	1,3140	1,3140	1,3130	1,3120	1,3110	1,3095	1,3085
		2,509	C	2,509	2,509	2,581	2,645	2,645	2,645	2,644	2,644	2,644	2,643	2,642	2,641	2,640
2	120,23	0,8854	v	-	-	-	0,8854	0,9349	0,9595	0,9840	1,0083	1,0325	1,0565	1,0804	1,1042	1,1280
		1,140	k	-	-	-	1,1400	1,2037	1,2690	1,3120	1,3120	1,3120	1,3110	1,3100	1,3095	1,3085
		2,513	C	-	-	-	2,513	2,563	2,612	6,643	2,643	2,643	2,642	2,641	2,610	2,640
3	133,54	0,6056	v	-	-	-	-	0,6167	0,6337	0,6506	0,6672	0,6837	0,7001	0,7164	0,7325	0,7486
		1,141	k	-	-	-	-	1,1380	1,1741	1,2300	1,3105	1,3100	1,3100	1,3095	1,3085	1,3080
		2,514	C	-	-	-	-	2,512	2,540	2,608	2,641	2,641	2,641	2,641	2,640	2,640
4	143,62	0,4622	v	-	-	-	-	-	0,4707	0,4837	0,4966	0,5093	0,5218	0,5343	0,5466	0,5589
		1,142	k	-	-	-	-	-	1,1370	1,1857	1,2620	1,3090	1,3110	1,3185	1,3070	1,3060
		2,515	C	-	-	-	-	-	2,511	2,549	2,607	2,641	2,642	2,647	2,639	2,639
5	151,84	0,3747	v	-	-	-	-	-	-	0,3835	0,3941	0,4045	0,4148	0,4250	0,435	0,445
		1,143	k	-	-	-	-	-	-	1,1365	1,1929	1,2620	1,3070	1,3070	1,3060	1,3055
		2,516	C	-	-	-	-	-	-	2,511	2,555	2,607	2,639	2,639	2,639	2,638
6	158,84	0,3155	v	-	-	-	-	-	-	0,3165	0,3257	0,3346	0,3434	0,3520	0,3606	0,3690
		1,144	k	-	-	-	-	-	-	1,1360	1,1480	1,2510	1,3050	1,3050	1,3050	1,3050
		2,517	C	-	-	-	-	-	-	2,510	2,520	2,599	2,638	2,638	2,638	2,638
7	164,96	0,2727	v	-	-	-	-	-	-	-	0,2767	0,2846	0,2923	0,2999	0,3074	0,3147
		1,143	k	-	-	-	-	-	-	-	1,1370	1,1769	1,2560	1,3040	1,3040	1,3040
		2,516	C	-	-	-	-	-	-	-	2,511	2,543	2,602	2,637	2,637	2,637
8	170,41	0,2403	v	-	-	-	-	-	-	-	-	0,2471	0,2540	0,2608	0,2675	0,2740
		1,142	k	-	-	-	-	-	-	-	-	1,137	1,1982	1,2610	1,3020	1,3020
		2,515	C	-	-	-	-	-	-	-	-	2,511	2,559	2,606	2,636	2.636
9	175,36	0,2148	v	-	-	-	-	-	-	-	-	0,2178	0,2241	0,2303	0,2364	0,2423
		1,141	k	-	-	-	-	-	-	-	-	1,139	1,1754	1,2540	1,3010	1,3015
		2,514	C	-	-	-	-	-	-	-	-	2,513	2,541	2,601	2,635	2,635
10	179,88	0,1943	v	-	-	-	-	-	-	-	-	0,1944	0,2002	0,2059	0,2115	0,2169
		1,140	k	-	-	-	-	-	-	-	-	1,140	1,1413	1,2480	1,3010	1,3010
		2,513	C	-	-	-	-	-	-	-	-	2,513	2,514	2,597	2,635	2,635
11	184,07	0,1774	v	-	-	-	-	-	-	-	-	-	0,1806	0,1859	0,1911	0,1961
		1,139	k	-	-	-	-	-	-	-	-	-	1,139	1,1814	1,2530	1,3005
		2,513	C	-	-	-	-	-	-	-	-	-	2,513	2,546	2,600	2,635
12	187,96	0,1632	v	-	-	-	-	-	-	-	-	-	0,1642	0,1692	0,1741	0,1788
		1,138	k	-	-	-	-	-	-	-	-	-	1,138	1,1565	1,2490	1,3000
		2,512	C	-	-	-	-	-	-	-	-	-	2,512	2,527	2,597	2,634
13	191,6	0,1511	v	-	-	-	-	-	-	-	-	-	-	0,1551	0,1597	0,1641
		1,137	k	-	-	-	-	-	-	-	-	-	-	1,137	1,1922	1,2580
		2,511	C	-	-	-	-	-	-	-	-	-	-	2,511	2,554	2,604
14	195	0,1407	v	-	-	-	-	-	-	-	-	-	-	0,1429	0,1473	0,1515
		1,136	k	-	-	-	-	-	-	-	-	-	-	1,135	1,1743	1,2530
		2,510	C	-	-	-	-	-	-	-	-	-	-	2,509	2,541	2,600

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 1-14 bar
Saturated : 230°C – 370 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370
1	V	2,513	2,359	2,406	2,453	2,499	2,546	2,592	2,639	2,865	2,732	2,788	2,824	2,871	2,917	2,964
	K	1,3085	1,3070	1,3060	1,3045	1,3030	1,3020	1,3010	1,3000	1,2990	1,2980	1,2970	1,2955	1,2945	1,2930	1,2905
	C	2,540	2,639	2,639	2,638	2,636	2,636	2,635	2,634	2,634	2,633	2,632	2,631	2,630	2,629	2,628
2	V	1,0964	1,1189	1,1414	1,1638	1,1862	1,2086	1,2309	1,2532	1,2755	1,2977	1,3199	1,3422	1,3644	1,3866	1,4087
	K	1,308	1,3065	1,3040	1,3040	1,3030	1,3015	1,3050	1,2990	1,2990	1,2990	1,2960	1,2940	1,2925	1,2910	1,2910
	C	2,640	2,639	2,637	2,637	2,636	2,635	2,638	2,634	2,634	2,634	2,631	2,630	2,629	2,628	2,628
3	V	0,7646	0,7805	0,7964	0,8123	0,8281	0,8438	0,8596	0,8753	0,8910	0,9066	0,9223	0,9380	0,9535	0,9691	0,9847
	K	1,3065	1,3045	1,3045	1,3040	1,3025	1,3010	1,3000	1,3000	1,2985	1,2980	1,2960	1,2950	1,2935	1,2920	1,2910
	C	2,639	2,638	2,638	2,637	2,636	2,635	2,634	2,634	2,633	2,633	2,631	2,631	2,630	2,629	2,628
4	V	0,5710	0,5831	0,5942	0,6072	0,6192	0,6311	0,6430	0,6549	0,6667	0,6785	0,6903	0,7021	0,7139	0,7256	0,7373
	K	1,3050	1,3075	1,3060	1,3050	1,3045	1,3020	1,3000	1,2995	1,2985	1,2975	1,2950	1,2940	1,2935	1,2920	1,2910
	C	2,638	2,640	2,639	2,638	2,638	2,636	2,634	2,634	2,633	2,632	2,631	2,630	2,630	2,629	2,628
5	V	0,4548	0,4647	0,4744	0,4841	0,4938	0,5034	0,5130	0,5226	0,5321	0,5416	0,5511	0,5606	0,5701	0,5795	0,5889
	K	1,3050	1,3030	1,3025	1,3025	1,3015	1,3015	1,3000	1,2990	1,2980	1,2965	1,2960	1,2945	1,2935	1,2910	1,2910
	C	2,638	2,636	2,636	2,636	2,635	2,635	2,634	2,634	2,633	2,632	2,631	2,630	2,630	2,629	2,629
6	V	0,3774	0,3857	0,3939	0,4021	0,4102	0,4183	0,4264	0,4344	0,4424	0,4504	0,4583	0,4663	0,4742	0,4821	0,4900
	K	1,3040	1,3040	1,3030	1,3020	1,3010	1,3005	1,3000	1,2990	1,2980	1,2970	1,2950	1,2935	1,2930	1,2920	1,2910
	C	2,637	2,637	2,636	2,636	2,635	2,635	2,634	2,634	2,633	2,632	2,631	2,630	2,629	2,629	2,628
7	V	0,3220	0,3292	0,3364	0,3435	0,3505	0,3575	0,3645	0,3714	0,3783	0,3852	0,3920	0,3989	0,4057	0,4125	0,4193
	K	1,3030	1,3025	1,3020	1,3015	1,3010	1,3000	1,2995	1,2990	1,2980	1,2960	1,2950	1,2940	1,2930	1,2915	1,2905
	C	2,636	2,636	2,636	2,635	2,635	2,634	2,634	2,634	2,633	2,631	2,631	2,630	2,629	2,628	2,628
8	V	0,2805	0,2869	0,2932	0,2995	0,3057	0,3119	0,3180	0,3241	0,3302	0,3363	0,3423	0,3483	0,3543	0,3603	0,3663
	K	1,3020	1,3020	1,3015	1,3010	1,3005	1,3000	1,2995	1,2985	1,2975	1,2960	1,2950	1,2935	1,2930	1,2915	1,2905
	C	2,636	2,636	2,635	2,635	2,635	2,634	2,634	2,633	2,633	2,631	2,631	2,630	2,629	2,628	2,628
9	V	0,2482	0,2539	0,2596	0,2653	0,2709	0,2764	0,2819	0,2874	0,2928	0,2983	0,3037	0,3090	0,3144	0,3197	0,3251
	K	1,3015	1,3010	1,3010	1,3005	1,3000	1,2995	1,2990	1,2985	1,2970	1,2955	1,2945	1,2930	1,2920	1,2910	1,2900
	C	2,635	2,635	2,635	2,635	2,634	2,634	2,634	2,633	2,632	2,631	2,630	2,929	2,629	2,628	2,627
10	V	0,2223	0,2276	0,2327	0,2379	0,2430	0,2480	0,2530	0,2580	0,2629	0,2678	0,2727	0,2776	0,2824	0,2873	0,2921
	K	1,3010	1,3010	1,3007	1,3005	1,3000	1,2995	1,2990	1,2980	1,2970	1,2960	1,2945	1,2935	1,2920	1,2910	1,2900
	C	2,635	2,635	2,635	2,635	2,634	2,634	2,634	2,633	2,632	2,631	2,630	2,630	2,628	2,628	2,627
11	V	0,2011	0,2060	0,2107	0,2155	0,2201	0,2248	0,2294	0,2339	0,2384	0,2429	0,2474	0,2518	0,2563	0,2607	0,2651
	K	1,3005	1,3005	1,3005	1,3000	1,2995	1,2990	1,2985	1,2970	1,2960	1,2950	1,2940	1,2930	1,2920	1,2910	1,2900
	C	2,635	2,635	2,635	2,634	2,634	2,634	2,633	2,632	2,631	2,631	2,630	2,629	2,629	2,628	2,627
12	V	0,1834	0,1879	0,1924	0,1968	0,2011	0,2054	0,2096	0,2139	0,2180	0,2222	0,2263	0,2304	0,2345	0,2386	0,2426
	K	1,3000	1,3000	1,3000	1,3000	1,2995	1,2990	1,2980	1,2970	1,2960	1,2950	1,2940	1,2925	1,2920	1,2910	1,2900
	C	2,634	2,634	2,634	2,634	2,634	2,634	2,633	2,632	2,631	2,631	2,630	2,629	2,629	2,628	2,627
13	V	0,1685	0,1727	0,1769	0,1810	0,1850	0,1890	0,1930	0,1969	0,2008	0,2046	0,2084	0,2123	0,2160	0,2198	0,2236
	K	1,3000	1,3000	1,3000	1,2995	1,2990	1,2980	1,2970	1,2965	1,2950	1,2940	1,2930	1,2920	1,2915	1,2905	1,2900
	C	2,634	2,634	2,634	2,634	2,634	2,633	2,632	2,631	2,631	2,630	2,629	2,629	2,628	2,628	2,627
14	V	0,1556	0,1596	0,1635	0,1674	0,1712	0,1749	0,1787	0,1823	0,1860	0,1896	0,1931	0,1967	0,2002	0,2038	0,2073
	K	1,3000	1,2995	1,2990	1,2990	1,2980	1,2980	1,2970	1,2960	1,2950	1,2945	1,2930	1,2920	1,2910	1,2905	1,2895
	C	2,634	2,634	2,634	2,634	2,633	2,633	2,632	2,631	2,631	2,630	2,629	2,629	2,628	2,628	2,627

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 1-14 bar
Saturated : 380°C – 520 °C

Superheated steam temperature in degrees Celsius

PRESS Bar a.	Temp >	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520
1	v	3,0100	3,0560	3,1020	3,1490	3,1950	3,2410	3,2880	3,3340	3,3800	3,4270	3,4730	3,5190	3,5650	3,6120	3,6580
	k	1,2905	1,2905	1,2880	1,2870	1,2855	1,2845	1,2830	1,2820	1,2810	1,2800	1,2788	1,2775	1,276	1,275	1,274
	C	2,628	2,628	2,626	2,625	2,624	2,623	2,622	2,621	2,621	2,620	2,619	2,618	2,617	2,616	2,616
2	v	1,4309	1,4531	1,4752	1,4973	1,5195	1,5416	1,5637	1,5858	1,6079	1,6300	1,6521	1,6742	1,6963	1,7184	1,7404
	k	1,2900	1,2895	1,2880	1,2870	1,2855	1,2845	1,2835	1,2825	1,2810	1,2785	1,2785	1,2775	1,2770	1,2750	1,2740
	C	2,627	2,627	2,626	2,625	2,624	2,623	2,623	2,622	2,621	2,619	2,618	2,618	2,618	2,616	2,616
3	v	1,0003	1,0158	1,0314	1,0469	1,0625	1,0780	1,0938	1,0900	1,1245	1,1401	1,1556	1,1710	1,1865	1,2020	1,2175
	k	1,2900	1,2890	1,2880	1,2880	1,2845	1,2840	1,2840	1,2824	1,2810	1,2796	1,2783	1,2777	1,2745	1,2750	1,2740
	C	2,627	2,626	2,626	2,626	2,623	2,623	2,623	2,622	2,621	2,620	2,619	2,618	2,616	2,616	2,616
4	v	0,7491	0,7608	0,7725	0,7842	0,7959	0,8076	0,8192	0,8309	0,8426	0,8542	0,8659	0,8775	0,8892	0,9008	0,9125
	k	1,2840	1,2840	1,2880	1,2870	1,2855	1,2845	1,2830	1,2820	1,2810	1,2795	1,2783	1,2775	1,2770	1,2750	1,2750
	C	2,623	2,623	6,626	2,625	2,624	2,623	2,622	2,621	2,621	2,620	2,619	2,618	2,618	2,616	2,616
5	v	0,5984	0,6078	0,6172	0,6266	0,6359	0,6453	0,6547	0,6640	0,6734	0,6828	0,6921	0,7014	0,7108	0,7201	0,7294
	k	1,2900	1,2890	1,2875	1,2860	1,2850	1,2845	1,2830	1,2820	1,2810	1,2790	1,2783	1,2775	1,2765	1,2750	1,2740
	C	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,616
6	v	0,4979	0,5057	0,5136	0,5214	0,5293	0,5371	0,5450	0,5528	0,5605	0,5684	0,5762	0,5840	0,5918	0,5996	0,6074
	k	1,2900	1,2890	1,2875	1,2860	1,2850	1,2840	1,2830	1,2820	1,2805	1,2790	1,2783	1,2775	1,2760	1,2750	1,2740
	C	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,616
7	v	0,4261	0,4329	0,4396	0,4464	0,4531	0,4599	0,4666	0,4733	0,4801	0,4868	0,4935	0,5002	0,5069	0,5136	0,5203
	k	1,2900	1,2880	1,2875	1,2860	1,2850	1,2840	1,2830	1,2820	1,2805	1,2790	1,2783	1,2772	1,2760	1,2750	1,2740
	C	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,616
8	v	0,3723	0,3782	0,3842	0,3901	0,3960	0,4019	0,4078	0,4137	0,4196	0,4255	0,4314	0,4373	0,4432	0,4490	0,4549
	k	1,2895	1,2880	1,2870	1,2860	1,2850	1,2840	1,2830	1,2820	1,2805	1,2790	1,2783	1,2775	1,2760	1,2750	1,2740
	C	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,616
9	v	0,3304	0,3357	0,3410	0,3463	0,3516	0,3569	0,3621	0,3674	0,3726	0,3779	0,3821	0,3884	0,3936	0,3988	0,4041
	k	1,2895	1,2880	1,2870	1,2860	1,2850	1,2840	1,2825	1,2815	1,2800	1,2790	1,2783	1,2770	1,2760	1,275	1,2740
	C	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,619	2,617	2,616	2,616
10	v	0,2969	0,3017	0,3065	0,3113	0,3160	0,3208	0,3256	0,3303	0,3350	0,3398	0,3445	0,3492	0,3540	0,3587	0,3634
	k	1,2880	1,2880	1,2870	1,2860	1,2850	1,2835	1,2825	1,2815	1,2800	1,2790	1,2780	1,2770	1,2760	1,2750	1,2740
	C	2,626	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,619	2,617	2,616	2,616
11	v	0,2694	0,2739	0,2782	0,2826	0,2870	0,2913	0,2956	0,3000	0,3043	0,3086	0,3129	0,3172	0,3215	0,3258	0,3301
	k	1,2890	1,2880	1,2870	1,2855	1,2850	1,2840	1,2825	1,2820	1,2800	1,2790	1,2780	1,2770	1,2760	1,2750	1,2735
	C	2,626	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,615
12	v	0,2467	0,2507	0,2547	0,2587	0,2627	0,2667	0,2707	0,2747	0,2787	0,2826	0,2866	0,2905	0,2945	0,2984	0,3024
	k	1,2890	1,2880	1,2870	1,2885	1,2845	1,2835	1,2850	1,2810	1,2800	1,2790	1,2780	1,2770	1,2760	1,2750	1,2740
	C	2,626	2,626	2,625	2,624	2,623	2,622	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,615
13	v	0,2273	0,2311	0,2348	0,2385	0,2422	0,2459	0,2496	0,2533	0,2570	0,2606	0,2643	0,2680	0,2716	0,2753	0,2789
	k	1,2890	1,2880	1,2870	1,2850	1,2845	1,2830	1,2825	1,2810	1,2800	1,2790	1,2780	1,2770	1,2760	1,2750	1,2740
	C	2,626	2,626	2,625	2,624	2,623	2,622	2,622	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,615
14	v	0,2108	0,2142	0,2177	0,2212	0,2246	0,2281	0,2315	0,2349	0,2384	0,2418	0,2452	0,2486	0,2520	0,2554	0,2588
	k	1,2880	1,2875	1,2865	1,2850	1,2840	1,2830	1,2823	1,2810	1,2800	1,2785	1,2780	1,2770	1,2760	1,2750	1,2375
	C	2,626	2,626	2,625	2,624	2,623	2,622	2,621	2,621	2,620	2,619	2,619	2,618	2,617	2,616	2,615

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 1-14 bar
Saturated : 530°C – 600 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	530	540	550	560	570	580	590	600
1	v	3,7040	3,7500	3,7970	3,8430	3,8890	3,9350	3,9810	4,0280
	k	1,2720	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610
2	v	1,7625	1,7846	1,8066	1,9202	1,9434	1,9666	1,9897	2,0129
	k	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2680	1,2670
	C	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,611
3	v	1,2330	1,2485	1,2639	1,2794	1,2949	1,3103	1,3258	1,3412
	k	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2670
	C	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,617
4	v	0,9241	0,9357	0,9474	0,9590	0,9706	0,9822	0,9938	1,0054
	k	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610
5	v	0,7388	0,7481	0,7574	0,7667	0,7760	0,7853	0,7946	0,8093
	k	1,2730	1,2720	1,2710	1,2695	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
6	v	0,6152	0,6230	0,6308	0,6386	0,6463	0,6541	0,6619	0,6696
	k	1,2730	1,2720	1,2705	1,2695	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
7	v	0,5207	0,5336	0,5403	0,5470	0,5537	0,5603	0,5670	0,5737
	k	1,2730	1,2720	1,2705	1,2695	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
8	v	0,4608	0,4666	0,4725	0,4783	0,4842	0,4900	0,4959	0,5017
	k	1,2730	1,2720	1,2705	1,2695	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
9	v	0,4093	0,4145	0,4197	0,4249	0,4301	0,4354	0,4406	0,4458
	k	1,2730	1,2720	1,2705	1,2965	1,2690	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
10	v	0,3681	0,3728	0,3775	0,3822	0,3869	0,3916	0,3963	0,4010
	k	1,2730	1,2720	1,2705	1,2695	1,2685	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610
11	v	0,3344	0,3387	0,3430	0,3473	0,3515	0,3558	0,3601	0,3643
	k	1,2725	1,2720	1,2705	1,2695	1,2680	1,2680	1,2660	1,2660
	C	2,615	2,614	2,613	2,612	2,611	2,611	2,610	2,610
12	v	0,3063	0,3103	0,3142	0,3181	0,3221	0,3260	0,3299	0,3380
	k	1,2725	1,2715	1,2700	1,2695	1,2680	1,2680	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,611	2,611	2,611	2,610
13	v	0,2826	0,2862	0,2898	0,2935	0,2971	0,3007	0,3044	0,3080
	k	1,2725	1,2715	1,2700	1,2695	1,2680	1,2670	1,2670	1,2660
	C	2,615	2,614	2,613	2,612	2,611	2,611	2,611	2,610
14	v	0,2622	0,2656	0,269	0,2724	0,2757	0,2791	0,2825	0,2859
	k	1,2725	1,2720	1,2700	1,2695	1,2680	1,2670	1,2660	1,2650
	C	2,615	2,614	2,613	2,612	2,611	2,611	2,610	2,609

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 15-32 bar
Saturated : 320°C

Superheated steam temperature in degrees Celsius

PRESS Bar a.	SAT Temp C	Sat. steam	Temp >	200	210	220	230	240	250	260	270	280	290	300	310	320
15	198,3	0,1317	v	0,1317	0,1317	0,1406	0,1445	0,1483	0,1520	0,1556	0,1592	0,1628	0,1663	0,1697	0,1731	0,1765
		1,135	k	1,133	1,133	1,3136	1,2970	1,2980	1,2980	1,2975	1,2980	1,2970	1,2965	1,2960	1,2950	1,2940
		2,509	C	2,508	2,508	2,644	2,632	2,633	2,633	2,633	2,633	2,632	2,632	2,631	2,631	2,630
16	201,4	0,1237	v	-	0,1237	0,1310	0,1347	0,1383	0,1419	0,1453	0,1487	0,1521	0,1554	0,1587	0,1619	0,1651
		1,134	k	-	1,133	1,1894	1,2550	1,2975	1,2970	1,2970	1,2960	1,2970	1,2960	1,2955	1,2945	1,294
		2,509	C	-	2,508	2,552	2,602	2,633	2,632	2,632	2,631	2,632	2,631	2,631	2,630	2,630
17	204,3	0,1166	v	-	0,1166	0,1225	0,1261	0,1296	0,1329	0,1362	0,1395	0,1427	0,1458	0,1489	0,1520	0,1550
		1,133	k	-	1,1315	1,1745	1,2500	1,2960	1,2960	1,2970	1,296	1,296	1,2950	1,2950	1,2940	1,2930
		2,508	C	-	2,507	2,541	2,598	2,631	2,631	2,632	2,631	2,631	2,631	2,631	2,630	2,629
18	207,1	0,1103	v	-	0,1103	0,1150	0,1184	0,1217	0,1250	0,1282	0,1313	0,1343	0,1373	0,1402	0,1432	0,1460
		1,132	k	-	1,1305	1,1513	1,2322	1,2950	1,2960	1,2960	1,2960	1,2960	1,2960	1,2940	1,2935	1,2930
		2,507	C	-	2,506	2,522	2,585	2,631	2,631	2,631	2,631	2,631	2,631	2,630	2,630	2,629
19	209,8	0,1047	v	-	0,1047	0,1047	0,1115	0,1147	0,1179	0,1209	0,1239	0,1268	0,1297	0,1325	0,1353	0,1380
		1,131	k	-	1,1300	1,1300	1,2133	1,2950	1,2960	1,2950	1,2950	1,2950	1,2940	1,2940	1,2935	1,2920
		2,506	C	-	2,505	2,505	2,571	2,631	2,631	2,631	2,631	2,631	2,630	2,630	2,630	2,629
20	212,4	0,0995	v	-	-	0,0995	0,1053	0,1084	0,1114	0,1144	0,1172	0,1200	0,1228	0,1255	0,1282	0,1308
		1,130	k	-	-	1,1295	1,1801	1,2500	1,2940	1,2940	1,2940	1,2940	1,2940	1,2930	1,2930	1,2920
		2,505	C	-	-	2,505	2,545	2,598	2,630	2,630	2,630	2,630	2,630	2,629	2,629	2,629
21	214,9	0,0949	v	-	-	0,0949	0,0997	0,1027	0,1056	0,1085	0,1112	0,1139	0,1166	0,1192	0,1217	0,1243
		1,129	k	-	-	1,1270	1,1672	1,2460	1,293	1,2935	1,2940	1,2935	1,293	1,293	1,2930	1,2920
		2,504	C	-	-	2,503	2,535	2,595	2,629	2,628	2,628	2,628	2,629	2,629	2,629	2,629
22	217,2	0,0907	v	-	-	0,0907	0,0946	0,9075	0,1004	0,1031	0,1058	0,1084	0,1109	0,1134	0,1159	0,1183
		1,128	k	-	-	1,1270	1,1410	1,2410	1,2915	1,2930	1,2930	1,2935	1,2930	1,2925	1,2920	1,2915
		2,504	C	-	-	2,503	2,514	2,591	2,628	2,629	2,629	2,628	2,629	2,629	2,629	2,628
23	219,6	0,0868	v	-	-	0,0868	0,0868	0,0928	0,0955	0,0982	0,1008	0,1033	0,1058	0,1082	0,1106	0,1129
		1,127	k	-	-	1,1240	1,1240	1,2094	1,2915	1,2920	1,2925	1,2925	1,2925	1,2920	1,2915	1,2915
		2,503	C	-	-	2,500	2,500	2,568	2,628	2,629	2,629	2,629	2,629	2,629	2,628	2,628
24	221,8	0,0832	v	-	-	-	0,0832	0,0884	0,0911	0,0937	0,0962	0,0986	0,1010	0,1034	0,1057	0,1079
		1,126	k	-	-	-	1,1230	1,1793	1,2480	1,2920	1,2925	1,2925	1,2925	1,2920	1,2915	1,2910
		2,502	C	-	-	-	2,500	2,544	2,597	2,629	2,629	2,629	2,629	2,629	2,628	2,628
26	226	0,0769	v	-	-	-	0,0769	0,0806	0,0832	0,0857	0,0881	0,0904	0,0926	0,0948	0,0970	0,0991
		1,123	k	-	-	-	1,1215	1,1556	1,2410	1,2905	1,2910	1,2915	1,2915	1,2920	1,2910	1,2905
		2,500	C	-	-	-	2,500	2,526	2,591	2,628	2,628	2,628	2,628	2,629	2,628	2,628
28	230,1	0,0714	v	-	-	-	-	0,0714	0,0764	0,0788	0,0811	0,0811	0,0833	0,0854	0,0875	0,0896
		1,121	k	-	-	-	-	1,1200	1,1837	1,2480	1,2910	1,2910	1,2910	1,2910	1,2915	1,2905
		2,498	C	-	-	-	-	2,497	2,548	2,597	2,628	2,628	2,628	2,628	2,628	2,628
30	233,8	0,0666	v	-	-	-	-	0,0666	0,0706	0,0728	0,0750	0,0771	0,0792	0,0812	0,0831	0,0850
		1,118	k	-	-	-	-	1,1180	1,1665	1,2420	1,2900	1,2900	1,2900	1,2905	1,2906	1,290
		2,496	C	-	-	-	-	2,496	2,534	2,592	2,627	2,627	2,627	2,628	2,628	2,627
32	237,5	0,0624	v	-	-	-	-	0,0624	0,06542,51	0,0676	0,0697	0,0717	0,0737	0,0756	0,0775	0,0793
		1,116	k	-	-	-	-	1,1180	1,1414	1,235	1,2880	1,2890	1,2890	1,290	1,2895	1,2900
		2,494	C	-	-	-	-	2,496	2,514	2,587	2,626	2,626	2,626	2,627	2,629	2,627

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 15-32 bar
Saturated : 330°C – 470 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470
15	v	0,1799	0,1832	0,1865	0,1898	0,1931	0,1964	0,1997	0,2029	0,2062	0,2094	0,2126	0,2158	0,2191	0,2223	0,2255
	k	1,2930	1,2920	1,2910	1,2900	1,2890	1,2880	1,2875	1,2870	1,2850	1,2845	1,2830	1,2820	1,2810	1,2800	1,2785
	C	2,629	2,629	2,628	2,627	2,626	2,626	2,625	2,625	2,624	2,623	2,622	2,621	2,621	2,620	2,619
16	v	0,1683	0,1714	0,1745	0,1777	0,1808	0,1838	0,1869	0,1900	0,1930	0,1961	0,1991	0,2021	0,2051	0,2082	0,2112
	k	1,2930	1,2920	1,2910	1,2900	1,2895	1,2890	1,2875	1,2865	1,2850	1,2840	1,2830	1,2820	1,2810	1,2795	1,2783
	C	2,629	2,629	2,628	2,627	2,625	2,625	2,625	2,625	2,624	2,623	2,622	2,621	2,621	2,620	2,619
17	v	0,1580	0,1610	0,1640	0,1669	0,1698	0,1728	0,1757	0,1785	0,1814	0,1843	0,1872	0,1900	0,1929	0,1957	0,1986
	k	1,2920	1,2915	1,2910	1,2900	1,2890	1,2890	1,2870	1,2860	1,2850	1,2840	1,2830	1,2820	1,2810	1,2800	1,2785
	C	2,629	2,628	2,628	2,627	2,626	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,621	2,620	2,619
18	v	0,1489	0,1517	0,1546	0,1573	0,1601	0,1629	0,1656	0,1684	0,1711	0,1738	0,1766	0,1793	0,1820	0,1847	0,1873
	k	1,2920	1,2910	1,2905	1,2900	1,2885	1,2880	1,2870	1,2860	1,2850	1,2840	1,2830	1,2820	1,2810	1,2795	1,2785
	C	2,629	2,628	2,628	2,627	2,626	2,625	2,625	2,624	2,624	2,623	2,622	2,621	2,621	2,620	2,619
19	v	0,1408	0,1435	0,1461	0,1488	0,1514	0,1541	0,1567	0,1593	0,1619	0,1645	0,1671	0,1696	0,1722	0,1748	0,1773
	k	1,2915	1,2910	1,2905	1,2900	1,2890	1,2875	1,2870	1,2860	1,2840	1,2840	1,2830	1,2820	1,2805	1,2795	1,2785
	C	2,628	2,628	2,628	2,627	2,626	2,625	2,625	2,624	2,623	2,623	2,622	2,621	2,620	2,620	2,619
20	v	0,1334	0,1360	0,1386	0,1411	0,1436	0,1461	0,1486	0,1511	0,1536	0,1561	0,1585	0,1610	0,1634	0,1659	0,1683
	k	1,2915	1,2910	1,2900	1,2900	1,2885	1,2875	1,2870	1,2860	1,2845	1,2840	1,2826	1,2820	1,2805	1,2795	1,2785
	C	2,628	2,628	2,627	2,627	2,626	2,625	2,625	2,624	2,623	2,623	2,622	2,621	2,620	2,620	2,619
21	v	0,1268	0,1293	0,1317	0,1341	0,1366	0,1390	0,1414	0,1437	0,1461	0,1485	0,1508	0,1531	0,1555	0,1578	0,1601
	k	1,2915	1,2910	1,2900	1,2895	1,2885	1,2880	1,2870	1,2855	1,2845	1,2840	1,2825	1,2820	1,2805	1,2795	1,2783
	C	2,628	2,628	2,627	2,627	2,626	2,626	2,625	2,624	2,623	2,623	2,622	2,621	2,620	2,620	2,619
22	v	0,1207	0,1231	0,1255	0,1278	0,1301	0,1314	0,1347	0,1370	0,1393	0,1415	0,1438	0,1460	0,1483	0,1505	0,1527
	k	1,2910	1,2905	1,2900	1,2895	1,2880	1,2875	1,2870	1,2855	1,2845	1,2835	1,2825	1,2820	1,2805	1,2790	1,2783
	C	2,628	2,628	2,627	2,627	2,626	2,625	2,625	2,624	2,623	2,623	2,622	2,621	2,620	2,619	2,619
23	v	0,1152	0,1175	0,1198	0,1330	0,1243	0,1265	0,1287	0,1309	0,1330	0,1352	0,1374	0,1395	0,1417	0,1438	0,1459
	k	1,2910	1,2905	1,2900	1,2890	1,2880	1,2875	1,2860	1,2850	1,2845	1,2835	1,2825	1,2820	1,2800	1,2790	1,2783
	C	2,628	2,628	2,627	2,626	2,626	2,625	2,624	2,624	2,623	2,623	2,622	2,621	2,620	2,619	2,619
24	v	0,1102	0,1124	0,1146	0,1167	0,1189	0,1210	0,1231	0,1252	0,1273	0,1294	0,1315	0,1336	0,1356	0,1377	0,1397
	k	1,2910	1,2905	1,2895	1,2890	1,2880	1,2870	1,2865	1,2850	1,2845	1,2835	1,2835	1,2825	1,2815	1,2805	1,2783
	C	2,628	2,628	2,627	2,626	2,626	2,625	2,624	2,624	2,623	2,623	2,623	2,622	2,621	2,620	2,619
26	v	0,1012	0,1033	0,1053	0,1073	0,1093	0,1113	0,1133	0,1153	0,1172	0,1192	0,1211	0,1230	0,1249	0,1268	0,1287
	k	1,2905	1,2900	1,2895	1,2895	1,2880	1,2870	1,2960	1,2850	1,2845	1,2830	1,2820	1,2810	1,2800	1,2875	1,2872
	C	2,628	2,627	2,627	2,627	2,626	2,625	2,624	2,624	2,623	2,622	2,621	2,621	2,620	2,619	2,619
28	v	0,0935	0,0955	0,0974	0,0993	0,1012	0,1030	0,1049	0,1067	0,1085	0,1104	0,1122	0,1140	0,1157	0,1175	0,1193
	k	1,2900	1,2895	1,2890	1,2880	1,2875	1,2865	1,2855	1,2845	1,2840	1,2830	1,2820	1,2810	1,2800	1,2790	1,2780
	C	2,627	2,627	2,626	2,626	2,625	2,625	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,619	2,619
30	v	0,0869	0,0887	0,0905	0,0923	0,0941	0,0958	0,0976	0,0993	0,1010	0,1027	0,1044	0,1061	0,1078	0,1095	0,1111
	C	1,2895	1,2890	1,2880	1,2880	1,2870	1,2865	1,2855	1,2845	1,2840	1,2830	1,2820	1,2810	1,2800	1,2790	1,2780
	C	2,627	2,626	2,626	2,626	2,625	2,625	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,619	2,619
32	v	0,0810	0,0828	0,0845	0,0862	0,0879	0,0896	0,0912	0,0928	0,0945	0,0961	0,0977	0,0993	0,1008	0,1024	0,1040
	k	1,2885	1,2885	1,2880	1,2880	1,2870	1,2860	1,2850	1,2845	1,2835	1,2825	1,2820	1,2805	1,2795	1,2785	1,2780
	C	2,626	2,626	2,626	2,626	2,625	2,624	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,619	2,619

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 15-32 bar
Saturated : 480°C – 600 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	480	490	500	510	520	530	540	550	560	570	580	590	600
15	v	0,2287	0,2318	0,2350	0,2382	0,2414	0,2446	0,2477	0,2509	0,2540	0,2572	0,2604	0,2635	0,2667
	k	1,2780	1,2770	1,2760	1,2745	1,2730	1,2725	1,2720	1,2700	1,2695	1,2685	1,2670	1,2650	1,2650
	C	2,619	2,618	2,617	2,616	2,615	2,615	2,614	2,613	2,612	2,611	2,611	2,609	2,609
16	v	0,2142	0,2172	0,2202	0,2231	0,2261	0,2291	0,2321	0,2351	0,2380	0,2410	0,2440	0,2469	0,2499
	k	1,2780	1,2765	1,2760	1,2745	1,2735	1,2725	1,2715	1,2700	1,2690	1,2680	1,2670	1,2650	1,2640
	C	2,619	2,617	2,617	2,616	2,615	2,615	2,614	2,613	2,612	2,611	2,611	2,609	2,608
17	v	0,2014	0,2042	0,2070	0,2099	0,2127	0,2155	0,2183	0,2211	0,2239	0,2267	0,2295	0,2323	0,2351
	k	1,2780	1,2760	1,2755	1,2745	1,2745	1,2725	1,2710	1,2700	1,2700	1,2680	1,2680	1,2670	1,2660
	C	2,619	2,617	2,617	2,616	2,615	2,615	2,613	2,613	2,613	2,611	2,611	2,611	2,610
18	v	0,1900	0,1927	0,1954	0,1980	0,2007	0,2034	0,2060	0,2087	0,2113	0,2140	0,2166	0,2193	0,2219
	k	1,2775	1,2765	1,2755	1,2745	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2680	1,2670	1,2660
	C	2,618	2,617	2,617	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,611	2,610
19	v	0,1799	0,1824	0,1849	0,1875	0,1900	0,1925	0,1951	0,1976	0,2001	0,2026	0,2051	0,2076	0,2101
	k	1,2775	1,2760	1,2755	1,2745	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2680	1,2670	1,2660
	C	2,618	2,617	2,617	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,611	2,610
20	v	0,1707	0,1731	0,1756	0,1780	0,1804	0,1828	0,1852	0,1876	0,1900	0,1924	0,1947	0,1971	0,1995
	k	1,2775	1,2760	1,2745	1,2745	1,2730	1,2725	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,615	2,613	2,613	2,612	2,611	2,611	2,610	2,609
21	v	0,16244	0,16475	0,16706	0,16936	0,17165	0,17695	0,17624	0,17853	0,18081	0,18309	0,18536	0,18764	0,18991
	k	1,2775	1,2765	1,2750	1,2745	1,2730	1,2723	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
22	v	0,15492	0,15713	0,15934	0,16154	0,16373	0,16593	0,16812	0,17030	0,17249	0,17457	0,17684	0,17901	0,18119
	k	1,2775	1,2765	1,2750	1,2745	1,2730	1,2730	1,2710	1,2700	1,2690	1.2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,615	2,613	2,613	2,612	2,611	2,611	2,610	2,609
23	v	0,14805	0,15017	0,15228	0,15439	0,15650	0,15860	0,16070	0,16280	0,16489	0,16698	0,16906	0,17114	0,17322
	k	1,2775	1,2765	1,2750	1,2745	1,2730	1,2725	1,2715	1,2700	1,2690	1,2680	1,2675	1,2670	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,615	2,614	2,613	2,612	2,611	2,611	2,611	2,609
24	v	0,14175	0,14379	0,14582	0,14785	0,14987	0,15189	0,15390	0,15591	0,15792	0,15993	0,16193	0,16393	0,16592
	k	1,2775	1,2765	1,2750	1,2740	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
26	v	0,13061	0,13250	0,13438	0,13626	0,13814	0,14001	0,14187	0,14374	0,14560	0,14745	0,14931	0,15116	0,15301
	k	1,2775	1,2760	1,2750	1,2740	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
28	v	0,12106	0,12282	0,12458	0,12633	0,12808	0,12982	0,13156	0,13330	0,13503	0,13676	0,13849	0,174022	0,14194
	k	1,2770	1,2760	1,2750	1,2740	1,2730	1,2720	1,2720	1,2700	1,2690	1,2680	1,2680	1,2660	1,2660
	C	2,618	2,617	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
30	v	0,11278	0,11443	0,11608	0,11772	0,11936	0,12100	0,12263	0,12426	0,12588	0,12750	0,12912	0,13073	0,13234
	C	1,2770	1,2760	1,2750	1,2740	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
32	v	0,10554	0,10709	0,10865	0,11019	0,11174	0,11328	0,11481	0,11634	0,11787	0,11939	0,12091	0,12243	0,12395
	k	1,2770	1,2760	1,2750	1,2740	1,2728	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,618	2,617	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609

Use linear interpolation for intermediate values

"to be continued"

Table 1 — **Steam data** (continued)

Pressure : 34-60 bar
Saturated : 250°C – 360 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	SAT Temp C	Sat. steam	Temp >	250	260	270	280	290	300	310	320	330	340	350	360
34	240,9	0,0587	v	0,0587	0,06305	0,0650	0,0670	0,0688	0,0707	0,0725	0,0742	0,0759	0,0776	0,0792	0,0808
		1,113	k	1,1120	1,1744	1,2430	1,2880	1,2900	1,2900	1,2900	1,2900	1,2900	1,2890	1,2880	1,2880
		2,492	C	2,491	2,541	2,593	2,625	2,627	2,627	2,627	2,627	2,627	2,626	2,626	2,626
36	244,2	0,0554	v	0,0554	0,0588	0,0608	0,0627	0,0645	0,0663	0,0680	0,0697	0,0713	0,0729	0,0745	0,0760
		1,111	k	1,1090	1,1490	1,2180	1,2870	1,2875	1,2875	1,2880	1,2880	1,2880	1,2875	1,2870	1,2870
		2,490	C	2,488	2,521	2,574	2,625	2,625	2,625	2,625	2,626	2,626	2,625	2,625	2,625
38	247,3	0,0524	v	0,0524	0,0551	0,0570	0,0589	0,0607	0,0624	0,0640	0,0656	0,0672	0,0688	0,0703	0,0717
		1,108	k	1,1060	1,1274	1,2067	1,2860	1,2870	1,2870	1,2870	1,2870	1,2870	1,2865	1,2870	1,2860
		2,487	C	2,486	2,503	2,566	2,624	2,625	2,625	2,625	2,625	2,625	2,625	2,625	2,624
40	250,3	0,0498	v	-	0,0498	0,0536	0,0554	0,0572	0,0588	0,0604	0,0620	0,0635	0,0650	0,0665	0,0679
		1,106	k	-	1,1050	1,1436	1,2400	1,2855	1,2860	1,2870	1,2865	1,2870	1,2865	1,2865	1,2855
		2,485	C	-	2,485	2,516	2,591	2,324	2,624	2,625	2,625	2,625	2,625	2,625	2,624
42	253,2	0,0473	v	-	0,0473	0,0505	0,0523	0,0540	0,0556	0,0572	0,0587	0,0602	0,0616	0,0630	0,0644
		1,103	k	-	1,1000	1,1725	1,2790	1,2850	1,2855	1,2885	1,2870	1.2855	1,2855	1,2855	1,2855
		2,483	C	-	2,481	2,539	2,619	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624
44	256,1	0,0451	v	-	0,0451	0,0477	0,0495	0,0511	0,0527	0,0542	0,0557	0,0571	0,0585	0,0599	0,0612
		1,100	k	-	1,0960	1,1265	1,2048	1,2830	1,2850	1,2850	1,2855	1,2855	1,2855	1,2855	1.2855
		2,481	C	-	2,477	2,502	2,564	2,622	2,624	2,624	2,624	2,624	2,624	2,624	2,624
46	258,8	0,0430	v	-	0,0430	0,0451	0,0469	0,0485	0,0500	0,0515	0,0530	0,0543	0,0557	0,0570	0,0583
		1,098	k	-	1,0940	1,1046	1,1933	1,2820	1,2840	1,2845	1,2850	1,2850	1,2850	1,2850	1,2850
		2,479	C	-	2,476	2,485	2,555	2,621	2,623	2,624	2,624	2,624	2,624	2,624	2,624
48	261,4	0,0412	v	-	-	0,0412	0,0444	0,0461	0,0476	0,0490	0,0504	0,0518	0,0531	0,0544	0,0566
		1,095	k	-	-	1,0940	1,1587	1,2340	1,2825	1,2840	1,2840	1.2840	1,2840	1,2840	1,2840
		2,477	C	-	-	2,476	2,528	2,585	2,622	2,623	2,623	2,623	2.622	2,622	2,623
50	263,9	0,0394	v	-	-	0,0394	0,0422	0,0438	0,0453	0,0467	0,0481	0,0494	0,0507	0,0519	0,0532
		1,093	k	-	-	1,0900	1,1650	1,2880	1,2810	1,2825	1,2830	1,2835	1,2845	1,2850	1,2850
		2,475	C	-	-	2,472	2,533	2,626	2,621	2.622	2,622	2,623	2,623	2,624	2,624
52	266,4	0,0378	v	-	-	0,0378	0,04016	0,0417	0,0432	0,0446	0,0460	0,0472	0,0485	0,0497	0,0501
		1,090	k	-	-	1,0860	1,1157	1,1980	1,2805	1,2820	1,2825	1,2830	1,2830	1,2840	1,2850
		2,473	C	-	-	2,469	2,494	2,559	2,621	2,621	2,622	2,622	2,622	2,623	2,624
54	268,8	0,0363	v	-	-	0,0363	0,0382	0,0398	0,0413	0,0426	0,0440	0,0452	0,0464	0,0476	0,0488
		1,088	k	-	-	1,0830	1,0942	1,1871	1,2800	1,2800	1,2820	1,2825	1,2830	1,2830	1,2830
		2,470	C	-	-	2,467	2,476	2,550	2,620	2,620	2,621	2,622	2,622	2,622	2,622
56	271,1	0,0350	v	-	-	-	0,0350	0,0380	0,0394	0,0408	0,0421	0,0433	0,0445	0,0457	0,0468
		1,085	k	-	-	-	1,0810	1,1507	1,2290	1,2800	1,2815	1,2820	1,2830	1,2825	1,2825
		2,468	C	-	-	-	2,465	2,772	2,582	2,620	2,621	2,621	2,622	2,622	2,622
58	273.4	0,0337	v	-	-	-	0,0337	0,0363	0,0377	0,0391	0,0404	0,0416	0,0428	0,0439	0,0450
		1,082	k	-	-	-	1,080	1,1373	1,2240	1,2783	1,2800	1,2810	1,2820	1,2820	1,2820
		2,466	C	-	-	-	2,464	2,511	2,579	2,619	2,620	2,621	2,621	2,621	2,621
60	275,6	0,0324	v	-	-	-	0,0324	0,0347	0,0361	0,0375	0,0387	0,0400	0,0411	0,0422	0,0433
		1,081	k	-	-	-	1,0750	1,1117	1,1950	1,2783	1,2800	1,2805	1,2815	1,2820	1,2820
		2,465	C	-	-	-	2,460	2,490	2,557	2,919	2,620	2,620	2,621	2,623	2,621

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 34-60 bar
Saturated : 370°C – 490 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	370	380	390	400	410	420	430	440	450	460	470	480	490
34	v	0,08242	0,08400	0,08556	0, 08711	0,08865	0,09017	0,09169	0,09319	0.09469	0,09618	0,09915	0,10062	0,10209
	k	1,2875	1,2860	1,2850	1,2845	1,2835	1,2825	1,2820	1,2805	1,2795	1,2785	1,2775	1,2760	1,2750
	C	2,625	2,624	2,624	2,623	2,623	2,622	2,621	2,624	2,620	2,619	2,618	2,618	2,617
36	v	0,07755	0,07906	0,08055	0,08202	0,08049	0,08494	0,08638	0,08781	0,08924	0,09065	0,09206	0,09347	0,09486
	k	1,2870	1,2850	1,2850	1,2840	1,2830	1,2820	1,2810	1,2800	1,2795	1,2783	1,2768	1,2765	1,2760
	C	2,625	2,624	2,624	2,622	2,622	2,621	2,621	2,620	2,620	2,619	2,618	2,618	2,617
38	v	0,07320	0,07464	0,07606	0,07747	0,07887	0,08025	0,08163	0,08300	0,08435	0,08570	0,08705	0,08838	0,08971
	k	1,2855	1,2850	1,2845	1,2835	1,2830	1,2820	1,2810	1,2800	1,2790	1,2783	1,2775	1,2775	1,2755
	C	2,624	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,619	2,619	2,618	2,618	2,617
40	v	0,06927	0,07066	0,07202	0,07338	0,07471	0,07604	0,07735	0,07866	0,07996	0,08125	0,08253	0,08381	0,08508
	k	1,2855	1,2850	1,2845	1,2835	1,2830	1,2820	1,2810	1,2800	1,2790	1,2783	1,2775	1,2765	1,2755
	C	2,624	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,619	2,619	2,618	2,617	2,617
42	v	0,06572	0,06706	0,06837	0,06967	0,07095	0,07222	0,07349	0,07474	0,07598	0,07722	0,07844	0,07967	0,08088
	k	1,2850	1,2845	1,2840	1,2830	1,2825	1,2820	1,2810	1,2800	1,2790	1,2782	1,2775	1,2765	1,2755
	C	2,624	2,623	2,622	2,622	2,622	2,621	2,621	2,620	2,619	2,619	2,618	2,617	2,617
44	v	0,06249	0,06378	0,06504	0,06630	0,06753	0,06876	0,06997	0,07117	0,07236	0,07355	0,07473	0,07590	0,07707
	k	1,2850	1,2845	1,2840	1,2830	1,2825	1,2815	1,2805	1,2800	1,2790	1,2782	1,2770	1,2765	1,2755
	C	2,624	2,623	2,622	2,622	2,622	2,621	2,620	2,620	2,619	2,619	2,618	2,617	2,617
46	v	0,05954	0,06079	0,06201	0,06321	0,06441	0,06559	0,06676	0,06791	0,06906	0,07020	0,07134	0,07247	0,07359
	k	1,2850	1,2840	1,2830	1,2828	1,2825	1,2815	1,2805	1,2800	1,2790	1,2780	1,2770	1,2765	1,2750
	C	2,624	2,623	2,622	2,622	2,622	2,621	2,620	2,620	2,619	2,619	2,618	2,617	2,615
48	v	0,05684	0,05804	0,05922	0,06039	0,06154	0,6268	0,06381	0,06493	0,06604	0,06714	0,06823	0,06931	0,07039
	k	1,2840	1,2840	1,2830	1,2825	1,2820	1,2815	1,2795	1,2795	1,2790	1,2780	1,2770	1,2765	1,2750
	C	2,623	2,623	2,622	2,622	2,621	2,621	2,620	2,620	2,619	2,619	2,618	2,617	2.616
50	v	0,05435	0,05551	0,05666	0,05779	0,05891	0,06001	0,06110	0,06222	0,06325	0,06431	0,06537	0,06642	0,06746
	k	1,12838	1,2830	1,2830	1,2823	1,2815	1,2810	1,2800	1,2790	1,2786	1,2780	1,2770	1,2765	1,2750
	C	2,623	2,622	2,622	2,622	2,621	2,621	2,620	2,619	2,619	2,619	2,618	2,617	2,616
52	v	0,05204	0,05318	0,05429	0,05539	0,05647	0,05754	0,05860	0,05964	0,06068	0,6171	0,06273	0,06374	0,06475
	k	1,2830	1,2830	1,2828	1,2825	1,2815	1,2810	1,2800	1,2790	1,2786	1,2780	1,2770	1,2765	1,2750
	C	2,622	2,622	2,622	2,622	2,621	2,621	2,620	2,619	2,619	2,619	2,618	2,617	2,616
54	v	0,04991	0,05102	0,05210	0,05317	0,05422	0,05525	0,05628	0,05729	0,05830	0,05929	0,06028	0,06126	0,06224
	k	1,2827	1,2820	1,2825	1,2820	1,2815	1,2805	1,2800	1,2790	1,2786	1,2780	1,2770	1,2765	1,2750
	C	2,622	2,621	2,622	2,621	2,621	2,620	2,619	2,619	2,619	2,619	2,618	2,617	2,616
56	v	0,04793	0,04701	0,05006	0,05110	0,05212	0,05313	0,05413	0,05511	0,05609	0,05705	0,05801	0,05896	0,06990
	k	1,2823	1,2830	1,2830	1,2820	1,2820	1,2805	1,2800	1,2790	1,2783	1,2775	1,2770	1,2760	1,275
	C	2,622	2,622	2,622	2,621	2,621	2,620	2,620	2,619	2,621	2,618	2,618	2,617	2,616
58	v	0,04608	0,04713	0,04816	0,04918	0,05017	0,05115	0,05212	0,05308	0,05403	0,05496	0,05589	0,05682	0,06773
	k	1,2820	1,2820	1,2820	1,2820	1,2820	1,2806	1,2795	1,2790	1,2783	1,2775	1,2770	1,2760	1,2750
	C	2,621	2,621	2,621	2,621	2,621	2,620	2,620	2,619	2,621	2,618	2,618	2,617	2,616
60	v	0,04436	0,04539	0,04639	0,04738	0,04835	0,04931	0,05025	0,05118	0,05211	0,05302	0,05392	0,05482	0,05571
	k	1,2820	1,2820	1,2820	1,2820	1,2820	1,2805	1,2795	1,2790	1,2783	1,2775	1,2700	12760	1,2750
	C	2.621	2,621	2,621	2,621	2,621	2,620	2,620	2,619	2,621	2,618	2,618	2,617	2,616

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 34-60 bar
Saturated : 500°C – 600 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	500	510	520	530	540	550	560	570	580	590	600
34	v	0,10209	0,10355	0,10501	0,10646	0,10791	0,10936	0,11080	0,11224	0,11368	0,11511	0,11654
	k	1,2750	1,2740	1,2730	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
36	v	0,09626	0,09764	0,09903	0,10040	0,10178	0,10315	0,10452	0,10588	0,10724	0,10860	0,10996
	k	1,2750	1,2740	1,2730	1,2720	1,2710	1,2690	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,616	2,615	2,614	2,613	2,612	2,612	2,611	2,611	2,610	2,609
38	v	0,09104	0,09236	0,09367	0,09499	0,09629	0,09760	0,09890	0,10019	0,10149	0,10278	0,10406
	k	1,2745	1,2735	1,2725	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
40	v	0,08634	0,08760	0,0886	0,09011	0,09135	0,29260	0,09384	0,09507	0,09631	0,09754	0,09876
	k	1,2745	1,2735	1,2725	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2.610	2,609
42	v	0,08209	0,08330	0,08450	0,08569	0,08689	0,08807	0,08926	0,09044	0,09162	0,09279	0,09397
	k	1,2745	1,2735	1,2725	1,2720	1,2710	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
44	v	0,07823	0,07938	0,08054	0,08168	0,08282	0,08396	0,08510	0,08623	0,08736	0,08848	0,08960
	k	1,2745	1,2735	1,2725	1,2720	1,2710	1,2700	1,2690	1.2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
46	v	0,07470	0,07581	0,07692	0,07802	0,07912	0,08021	0,08130	0,08238	0,08347	0,08455	0,08562
	k	1,2745	1,2735	1,2725	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
48	v	0,07147	0,07254	0,07360	0,07466	0,07572	0,07677	0,07782	0,07886	0,07990	0,08094	0,08197
	k	1,2745	1,2735	1,2725	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2.611	2,611	2,610	2.609
50	v	0,06849	0,06952	0,07055	0,07157	0,07259	0,07360	0,07461	0,07562	0,07662	0,07762	0,07862
	k	1,2743	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1.2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
52	v	0,06575	0,06674	0,06773	0,06872	0,06970	0,07068	0,07165	0,07262	0,07359	0,07455	0,07552
	k	1,2743	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
54	v	0,06320	0,06417	0,06513	0,06608	0,06703	0,06797	0,06891	0,06985	0,07079	0,07172	0,07265
	k	1,2743	1.2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
56	v	0,06084	0,06178	0,06270	0,06363	0,06455	0,06546	0,06637	0,06728	0,06818	0,06908	0,06998
	k	1,2743	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
58	v	0,05864	0,05955	0,06045	0,06134	0,06223	0,06312	0,06400	0,06488	0,06576	0,06663	0,06750
	C	1,2743	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
60	v	0,05659	0,05747	0,05834	0,05921	0,06008	0,06094	0,06179	0,06265	0,06349	0,06434	0,06518
	k	1,2743	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,616	2,615	2,615	2,614	2,613	2,612	2,611	2,611	2,610	2,609	

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 62-115 bar
Temperature : Saturated 380 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	SAT Temp C	Sat. steam	Temp >	280	290	300	310	320	330	340	350	360	370	380
62	277,7	0,03130	v	0,03130	0,03323	0,03465	0,03598	0,03722	0,03841	0,03955	0,04065	0,04171	0,04274	0,04375
		1,077	k	1,070	1,0913	1,1842	1,2770	1,2783	1,2800	1,2805	1,2815	1,2820	1,2820	1,2820
		2,462	C	2,456	2,474	2,548	2,618	2,619	2,620	2,620	2,621	2,621	2,621	2,621
64	279,8	0,03023	v	0,03023	0,03182	0,03324	0,03456	0,03580	0,03697	0,03809	0,03917	0,04021	0,04221	0,04318
		1,073	k	1,070	1,0720	1,1735	1,275	1,2770	1,2800	1,280	1,2830	1,2810	1,2810	1,2815
		2,458	C	2,456	2,457	2,540	2,616	2,618	2,620	2,620	2,622	2,621	2,621	2,621
66	281,8	0,02922	v	-	0,02922	0,03191	0,03322	0,03445	0,03561	0,03672	0,03778	0,03881	0,03980	0,04077
		1,069	k	-	1,069	1,1618	1,2750	1,2760	1,2783	1,2785	1,2800	1,2805	1,2810	1,2810
		2,455	C	-	2,455	2,531	2,616	2,617	2,619	2,619	2,620	2,620	2,621	2,621
68	283,8	0,02827	v	-	0,02827	0,03065	0,03196	0,03318	0,03433	0,03542	0,03647	0,03748	0,03846	0,03941
		1,066	k	-	1,068	1,1468	1,2740	1,2760	1,2780	1,2785	1,2800	1,2800	1,2805	1,2805
		2,452	C	-	2,454	2,519	2,616	2,617	2,619	2,619	2,620	2,620	2,620	2,620
70	285,8	0,02737	v	-	-	0,02737	0,03076	0,03198	0,03312	0,03420	0,03523	0,03623	0,03719	0,03812
		1,062	k	-	-	1,065	1,1882	1,2750	1,2770	1,2783	1,2795	1,2800	1,2805	1,2805
		2,449	C	-	-	2,451	2,551	2,616	2,618	2,619	2,620	2,620	2,620	2,620
76	291,4	0,02495	v	-	-	0,02495	0,02752	0,02873	0,02985	0,03090	0,03190	0,03286	0,03378	0,03467
		1,050	k	-	-	1,068	1,1623	1,2720	1,2740	1,2760	1,2770	1,2785	1,2795	1,2783
		2,439	C	-	-	2,445	2,531	2,614	2,616	2,617	2,618	2,619	2,620	2,619
80	295	0,0235	v	-	-	0,0235	0,02560	0,02681	0,02792	0,02896	0,02995	0,03088	0,03178	0,03265
		1,043	k	-	-	1,050	1,1233	1,2700	1,2725	1,2745	1,2765	1,2783	1,2785	1,2790
		2,432	C	-	-	2,439	2,500	2,613	2,616	2,616	2,617	2,619	2,619	2,619
86	300,1	0,0216	v	-	-	0,0216	0,0216	0,02424	0,02535	0,02638	0,02734	0,02826	0,02913	0,02997
		1,031	k	-	-	1,048	1,048	1,1584	1,2700	1,27251	1,2740	1,2760	1,2783	1,2783
		2,422	C	-	-	2,439	2,439	2,528	2,613	2,616	2,616	2,617	2,619	2,619
90	303,3	0,02050	v	-	-	-	0,02050	0,02269	0,02381	0,02484	0,02579	0,02669	0,02755	0,02837
		1,023	k	-	-	-	1,043	1,1333	1,2680	1,2710	1,2730	1,2750	1,2765	1,2780
		2,415	C	-	-	-	2,433	2,508	2,611	2,613	2,615	2,616	2,617	2,619
96	308	0,01897	v	-	-	-	-	0,01897	0,02171	0,02274	0,02369	0,02458	0,0242	0,02622
		1,012	k	-	-	-	-	1,020	1,1588	1,2690	1,2725	1,2740	1,2755	1,2765
		2,405	C	-	-	-	-	2,412	2,528	2,612	2,615	2,616	2,617	2,619
100	311	0,01897	v	-	-	-	-	0,01897	0,02042	0,02147	0,02242	0,02331	0,02414	0,02493
		1,004	k	-	-	-	-	1,020	1,1375	1,2680	1,2710	1,2730	1,2750	1,2760
		2,398	C	-	-	-	-	2,412	2,511	2,611	2,613	2,615	2,616	2,617
105	314,6	0,01698	v	-	-	-	-	0,01698	0,01894	0,02000	0,02096	0,02184	0,02266	0,02344
		0.996	k	-	-	-	-	1,000	1,0929	1,2650	1,2690	1,2725	1,2770	1,2758
		2,391	C	-	-	-	-	2,395	2,475	2,609	2,612	2,615	2,618	2,617
110	318,1	0,01601	v	-	-	-	-	0,01601	0,01755	0,01864	0,01961	0,02049	0,02131	0,02208
		0,987	k	-	-	-	-	0,990	1,0139	1,1394	1,2650	1,2700	1,2730	1,2765
		2,383	C	-	-	-	-	2,386	2,407	2,513	2,609	2,613	2,615	2,619
115	321,4	0,01511	v	-	-	-	-	-	0,01511	0,01738	0,01836	0,01926	0,02007	0,02084
		0,979	k	-	-	-	-	-	0,980	1,1118	1,2650	1,2700	1,2720	1,2745
		2,375	C	-	-	-	-	-	2,376	2,490	2,609	2,613	2,614	2,616

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 62-115 bar
Temperature : 390°C – 500 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	390	400	410	420	430	440	450	460	470	480	490	500
62	v	0,04473	0,04570	0,04664	0,04758	0,04850	0,04941	0,05030	0,05119	0,05207	0,05295	0,05381	0,05467
	k	1,2820	1,2810	1,2805	1,2800	1,2795	1,2790	1,2783	1,2775	1,2770	1,2760	1,2750	1,2743
	C	2,621	2,621	2,620	2,620	2,620	2,619	2,621	2,618	2,618	2,617	2,616	2,616
64	v	0,04218	0,04412	0,04505	0,04596	0,04685	0,04774	0,04862	0,04948	0,055034	0,05119	0,05203	0,05287
	k	1,2810	1,2810	1,2805	1,2800	1,2795	1,2785	1,2780	1,2770	1,2765	1,2760	1,2750	1,2745
	C	2,621	2,621	2,620	2,620	2,620	2,619	2,619	2,618	2,617	2,617	2,616	2,616
66	v	0,04171	0,04264	0,04354	0,04443	0,04351	0,04618	0,04703	0,04788	0,04871	0,04954	0,05036	0,05118
	k	1,2810	1,2805	1,2805	1,2795	1,2795	1,2785	1,2780	1,2773	1,2765	1,2760	1,2750	1,2740
	C	2,621	2,620	2,620	2,620	2,620	2,619	2,619	2,618	2,618	2,617	2,616	2,616
68	v	0,04033	0,04124	0,04213	0,04300	0,04386	0,04470	0,04554	0,04636	0,04718	0,04799	0,04879	0,04959
	k	1,2805	1,2805	1,2800	1,2796	1,2790	1,2785	1,2780	1,2780	1,2770	1,2760	1,2750	1,2740
	C	2,620	2,620	2,620	2,620	2,619	2,619	2,619	2,619	2,618	2,617	2,616	2,616
70	v	0,03903	0,03992	0,04079	0,04165	0,04249	0,04331	0,04413	0,04494	0,04574	0,04653	0,04731	0,04809
	k	1,2805	1,2800	1,2800	1,2795	1,2790	1,2783	1,2783	1,2775	1,2765	1,2760	1,2750	1,2743
	C	2,620	2,620	2,620	2,620	2,619	2,619	2,619	2,618	2,618	2,617	2,616	2,616
76	v	0,03554	0,03638	0,03720	0,03801	0,03880	0,03958	0,04035	0,04111	0,04186	0,04260	0,044333	0,04406
	k	1,2795	1,2800	1,2795	1,2790	1,2788	1,2783	1,2780	1,2775	1,2766	1,2760	1,2750	1,2743
	C	2,620	2,620	2,620	2,619	2,619	2,619	2,619	2,618	2,618	2,617	2,616	2,616
80	v	0,03349	0,03421	0,03511	0,03589	0,03665	0,03740	0,03814	0,03887	0,3959	0,04030	00,04101	0,04170
	k	1,2795	1,2795	1,2795	1,2790	1,2784	1,2783	1,2775	1,2775	1,2766	1,2762	1,2750	1,2745
	C	2,620	2,620	2,620	2,619	2,619	2,619	2,618	2,618	2,618	2,617	2,615	2,615
86	v	0,03078	0,03156	0,03232	0,03307	0,03380	,03451	0,03522	0,03591	0,03659	0,03726	0,03793	0,03859
	k	1,2785	1,2790	1,2790	1,2790	1,2785	1,2780	1,2770	1,2773	1,2766	1,2760	1,2705	1,2695
	C	2,619	2,619	2,619	2,619	2,619	2,619	2,618	2,618	2,618	2,617	2,613	2,612
90	v	0,02916	0,02993	0,03067	0,03140	0,03211	0,03280	0,03348	0,03415	0,03481	0,03546	0,03610	0,03674
	k	1,2783	1,2785	1,2795	1,2790	1,2785	1,2780	1,2775	1,2770	1,2765	1,2760	1,2750	1,2750
	C	2,619	2,619	2,620	2,619	2,619	2,619	2,618	2,618	2,617	2,617	2,616	2,616
96	v	0,02699	0,02773	0,02845	0,02915	0,02983	0,03049	0,03114	0,03179	0,03241	0,03304	0,03365	0,03425
	k	1,2780	1,2783	1,2785	1,2783	1,2780	1,2775	1,2770	1,2770	1,2765		1,2755	1,2750
	C	2,619	2,619	2,619	2,619	2,619	2,619	2,618	2,618	2,618	2,617	2,617	2,616
100	v	0,02568	0,02641	0,02711	0,02779	0,02846	0,02911	0,02974	0,03036	0,03098	0,03158	0,03217	0,03276
	k	1,2765	1,2765	1,2783	1,2785	1,2780	1,2780	1,2775	1,2775	1,2765	1,2760	1,2755	1,2750
	C	2,619	2,619	2,619	2,619	2,619	2,619	2,618	2,618	2,617	2,617	2,617	2,616
105	v	0,02418	0,02489	0,02558	0,02624	0,02689	0,02752	0,02814	0,02874	0,02933	0,02992	0,03049	0,03105
	k	1,2765	1,2790	1,2790	1,2785	1,2782	1.2780	1,2775	1,2765	1,2765	1,2760	1,2755	1,2755
	C	2,619	2,619	2,619	2,619	2,619	2,619	2,618	2,617	2,617	2,617	2,617	2,617
110	v	0,02281	0,02351	0,02418	0,02483	0,02546	0,02608	0,02668	0,02726	0,02784	0,02840	0,02896	0,02950
	C	1,2758	1,2790	1,2792	1,2785	1,2780	1,2783	1,2780	1,2765	1,2765	1,2760	1,2755	1,2755
	C	1,617	2,619	2,619	2,619	2,619	2.619	2,619	2,617	2,617	2,617	2,617	2,617
115	v	0,02156	0,02225	0,02291	0,02354	0,02416	0,02476	0,02534	0,02591	0,02647	0,02702	0,02756	0,02809
	k	1,2755	1,2765	1,2785	1,2783	1,2790	1,2783	1,2783	1,2780	1,2765	1,2765	1,2765	1,2760
	C	2,617	2,617	2,619	2,619	2,619	2,619	2,619	2,619	2,619	2,617	2,617	2,617

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 62-115 bar
Temperature : 510°C – 600 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	510	520	530	540	550	560	570	580	590	600
62	v	0,05553	0,05637	0,05722	0,05806	0,05889	0,05973	0,06055	0,06138	0,06220	0,06302
	k	1,2735	1,2726	1,2720	1,2708	1,2700	1,2690	1,2680	1,2670	1,2660	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,611	2,609
64	v	0,05370	0,05453	0,05535	0,05617	0,05698	0,05779	0,05859	0,05939	0,06019	0,06099
	k	1,2735	1,2725	1,2720	1,2700	1,2700	1,2690	1,2683	1,2680	1,2660	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
66	v	0,05199	0,05279	0,05359	0,05439	0,05518	0,05597	0,05675	0,05753	0,05831	0,05908
	k	1,2735	1,2725	1,2720	1,2710	1,2700	1,2690	1,2680	1,2680	1,2660	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
68	v	0,05038	0,05116	0,05194	0,05272	0,05349	0,05425	0,05501	0,05577	0,05653	0,05728
	k	1,2735	1,2727	1,2720	1,2710	1,2700	1,2690	1,2690	1,2670	1,2665	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,612	2,611	2,610	2,609
70	v	0,04886	0,04962	0,05038	0,05114	0,05189	0,05226	0,05338	0,05412	0,05486	0,05559
	k	1,2735	1,2730	1,2717	1,2710	1,2700	1,2690	1,2690	1,2670	1,2665	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,612	2,611	2,610	2,609
76	v	0,04478	0,04549	0,04620	0,04690	0,04860	0,04830	0,04899	0,04968	0,05036	0,05105
	k	1,2735	1,2730	1,2720	1,2710	1,2700	1,2695	1,2680	1,2680	1,2660	1,2650
	C	2,615	2,615	2,614	2,613	2,613	2,612	2,611	2,611	2,610	2,609
80	v	0,04239	0,04308	0,04376	0,04443	0,04510	0,04577	0,04643	0,04709	0,04774	0,04839
	k	1,2735	1,2730	1,2720	1,2713	1,2705	1,2695	1,2695	1,2680	1,2660	1,2650
	C	2,615	2,615	2,614	2,614	2,613	2,612	2,612	2,611	2,610	2,609
86	v	0,03942	0,03988	0,04052	0,04116	0,04179	0,04241	0,04304	0,04365	0,04427	0,04488
	k	1,2740	1,2730	1,2720	1,2715	1,2705	1,2695	1,2690	1,2680	1,2660	1,2650
	C	2,616	2,615	2,614	2,614	2,613	2,612	2,612	2,611	2,610	2,609
90	v	0,03736	0,03799	0,03860	0,03922	0,03982	0,04042	0,04102	0,04162	0,04221	0,04280
	k	1,2745	1,2730	1,2723	1,2715	1,2710	1,2700	1,2690	1,2680	1,2660	1,2660
	C	2,616	2,615	2,614	2,614	2,613	2,613	2,612	2,611	2,610	2,610
96	v	0,03485	0,03544	0,03603	0,03661	0,03718	0,3775	0,03832	0,03888	0,03944	0,04000
	k	1,2745	1,2740	1,2730	1,2720	1,2710	1,2700	1,2695	1,2690	1,2670	1,2670
	C	2,616	2,616	2,615	2,614	2,613	2,613	2,612	2,612	2,611	2,611
100	v	0,03334	0,03391	0,03448	0,03504	0,03560	0,03615	0,03670	0,03724	0,03778	0,03832
	k	1,2645	1,2740	1,2730	1,2720	1,2715	1,2705	1,2700	1,2695	1,2680	1,2670
	C	2,616	2,616	2,615	2,614	2,614	2,613	2,613	2,612	2,611	2,611
105	v	0,03161	0,03216	0,03271	0,03325	0,03379	0,03432	0,03484	0,03537	0,03589	0,03640
	k	1,2750	1,2745	1,2735	1,2725	1,2715	1,2720	1,2700	1,2695	1,2690	1,2670
	C	2,616	2,616	2,615	2,615	2,614	2,614	2,613	2,612	2,612	2,611
110	v	0,03004	0,03058	0,03110	0,03162	0,03214	0,03265	0,03316	0,03366	0,03416	0,03466
	C	1,2750	1,2745	1,2740	1,2725	1,2725	1,2730	1,2710	1,2700	1,2690	1,2670
	C	2,616	2,616	2,616	2,615	2,615	2,615	2,613	2,613	2,612	2,611
115	v	0,02861	0,02912	0,02963	0,03014	0,03064	0,03113	0,03162	0,03210	0,03258	0,03306
	k	1,2755	1,2750	1,2740	1,2735	1,2750	1,2730	1,2715	1,2700	1,2695	1,2680
	C	2,617	2,616	2,616	2,615	2,616	2,615	2,614	2,613	2,612	2,611

Use linear interpolation for intermediate values

"to be continued"

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Table 1 — Steam data (continued)

Pressure : 120-185 bar
Temperature : Saturated 420°C

Superheated steam temperature in degrees Celsius

PRESS bar a.	SAT Temp C	Sat. steam	Temp >	330	340	350	360	370	380	390	400	410	420
120	324,7	0,01428	v	0,01428	0,01619	0,01721	0,01811	0,01893	0,01969	0,02041	0,02108	0,02173	0,02236
		0,970	k	0,980	1,0777	1,2620	1,2680	1,2715	1,2740	1,2745	1,2765	1,2790	1,2780
		2,367	C	2,376	2,462	2,609	2,611	2,614	2,616	2,616	2,617	2,619	2,619
125	327,8	0,01351	v	0,01351	0,01508	0,01612	0,01704	0,01787	0,01863	0,01934	0,02001	0,002065	0,02126
		0,962	k	0,965	0,995	1,1304	1,2660	1,2710	1,2725	1,2800	1,277	1,2780	1,2790
		2,359	C	2,363	2,390	2,506	2,610	2,613	2,615	2,620	2,618	2,619	2,619
130	330,8	0,01280	v	-	0,01280	0,01510	0,01504	0,01688	0,01764	0,01835	0,01902	0,01965	0,02025
		0,953	k	-	0,960	1,1606	1,2650	1,2710	1,2725	1,2750	1,2765	1,2783	1,2790
		2,352	C	-	2,358	2,530	2,609	2,613	2,615	2,616	2,617	2,619	2,619
135	333,8	0,01213	v	-	0,01213	0,01413	0,01510	0,01595	0,01672	0,01743	0,01809	0,01872	0,01931
		0,945	k	-	0,950	1,0717	1,2680	1,2700	1,2725	1,2750	1,2770	1,2780	1,2795
		2,344	C	-	2,349	2,457	2,611	2,613	2,615	2,616	2,618	2,619	2,620
140	336,6	0,01150	v	-	0,01150	0,01321	0,01421	0,01508	0,01586	0,01657	0,01723	0,01785	0,01844
		0,936	k	-	0,940	0,988	1,1284	1,2690	1,2725	1,2750	1,2775	1,2780	1,2795
		2,335	C	-	2,339	2,384	2,504	2,612	2,6127	2,616	2,618	2,619	2,620
145	339,4	0,01090	v	-	0,01090	0,01232	0,01337	0,01426	0,01505	0,01576	0,01642	0,01704	0,01762
		0,928	k	-	0,925	0,935	1,1018	1,2685	1,2720	1,2800	1,2785	1,2795	1,2800
		2,327	C	-	2,325	2,335	2,482	2,612	2,614	2,620	2,619	2,620	2,620
150	342,1	0,01034	v	-	-	0,01034	0,01256	0,01348	0,01428	0,01500	0,01566	0,01628	0,1686
		0,919	k	-	-	0,920	1,0736	1,2680	1,2720	1,2750	1,2783	1,2800	1,2810
		2,319	C	-	-	2,320	2,459	2,611	2,614	2,616	2,619	2,620	2,621
155	344,8	0,00981	v	-	-	0,00981	0,01179	0,01274	0,01356	0,01429	0,01495	0,01556	0,01614
		0,905	k	-	-	0,910	1,0321	1,2670	1,2720	1,2750	1,2783	1,2800	1,2815
		2,306	C	-	-	2,310	2,423	2,611	2,614	2,616	2,619	2,620	2,621
160	347,3	0,009308	v	-	-	-	0,009308	0,01203	0,01287	0,01361	0,01427	0,01489	0,01546
		0,891	k	-	-	-	0,890	1,1037	1,2720	1,2750	1,2770	1,2820	1,2840
		2,292	C	-	-	-	2,291	2,484	2,614	2,616	2.618	2,621	2,623
165	349,8	0,009308	v	-	-	-	0,009308	0,01135	0,01222	0,01297	0,01364	0,01425	0,01483
		0,877	k	-	-	-	0,890	0,877	1,2730	1,2760	1,2800	1,2830	1,2850
		2,278	C	-	-	-	2,291	2,278	2,615	2,617	2,620	2,622	2,624
170	352,3	0,008371	v	-	-	-	0,008371	0,01069	0,01159	0,01235	0,01303	0,01365	0,01423
		0,863	k	-	-	-	0,870	0,873	1,2730	1,2785	1,2800	1,2850	1,2850
		2,264	C	-	-	-	2,271	2,274	2,615	2,619	2,620	2,624	2,624
175	354,6	0,007926	v	-	-	-	-	0,007926	0,01099	0,01177	0,01246	0,01308	0,01366
		0,850	k	-	-	-	-	0,850	1,1097	1,2783	1,2820	1,2860	1,2880
		2,250	C	-	-	-	-	2,251	2,489	2,619	2,621	2,624	2,626
180	357	0,007498	v	-	-	-	-	0,007498	0,01040	0,01121	0,01191	0,01254	0,01311
		0,836	k	-	-	-	-	0,840	1,0887	1,2800	1,2830	1,2870	1,2880
		2,236	C	-	-	-	-	2,240	2,471	2,620	2,622	2,625	2,626
185	359,2	0,007083	v	-	-	-	-	0,007083	0,009844	0,01068	0,01139	0,01202	0,01260
		0,822	k	-	-	-	-	0,830	1,0637	1,2800	1,2850	1,2890	1,2880
		2,221	C	-	-	-	-	2,230	2,450	2,620	2,624	2,626	2,626

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 120-185 bar
Temperature : 430°C – 540 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	430	440	450	460	470	480	490	500	510	520	530	540
120	v	0,02296	0,02355	0,02412	0,02467	0,02522	0,02575	0,02627	0,02679	0,02729	0,02779	0,02829	0,02877
	k	1,2790	1,2790	1,2785	1,2783	1,2780	1,2780	1,2770	1,2765	1,2760	1,2750	1,2740	1,2735
	C	2,619	2,619	2,619	2,619	2,619	2,619	2,618	2,617	2,617	2,616	2,616	2,615
125	v	0,02186	0,02243	0,02299	0,02353	0,02406	0,02485	0,02509	0,02559	0,02608	0,02657	0,02705	0,02752
	k	1,2792	1,2790	1,2795	1,2790	1,2783	1,2780	1,2770	1,2770	1,2765	1,2760	1,2750	1,2745
	C	2,619	2,619	2,620	2,619	2,619	2,619	2.618	2,618	2,617	2,617	2,616	2,616
130	v	0,02083	0,02140	0,02194	0,02247	0,02299	0,02350	0,02400	0,02440	0,02496	0,02544	0,02590	0,02636
	k	1,2795	1,2800	1,2795	1,2795	1,2795	1,2780	1,2782	1,2773	1,2770	1,2765	1,2755	1,2750
	C	2,620	2,620	2,620	2,620	2,620	2,619	2,619	2,619	2,618	2,617	2,617	2,616
135	v	0,01989	0,02044	0,02098	0,02150	0,02200	0,02250	0,02298	0,02346	0,02393	0,02439	0,02484	0,02529
	k	1,2795	1,2800	1,2795	1,2800	1,2800	1,2790	1,2783	1,2783	1,2770	1,2766	1,2766	1,2766
	C	2,620	2,620	2,620	2,620	2,620	2,619	2,619	2,619	2,618	2,618	2,618	2,616
140	v	0,01900	0,01955	0,02008	0,02059	0,02108	0,02157	0,02204	0,02251	0,02297	0,02342	0,02386	0,02429
	k	1,2800	1,2810	1,2820	1,2800	1,2800	1,2800	1,2790	1,2745	1,2780	1,2780	1,2766	1,2755
	C	2,620	2,621	2,621	2,620	2,620	2,620	2,619	2,616	2,619	2,619	2,618	2,617
145	v	0,01818	0,01872	0,01924	0,01974	0,02023	0,02070	0,02117	0,02162	0,02207	0,02251	0,02294	0,02337
	k	1,2810	1,2820	1,2820	1,2810	1,2810	1,2800	1,2790	1,2790	1,2785	1,2780	1,2780	1,2770
	C	2,621	2,621	2,621	2,621	2,621	2,620	2,619	2,619	2,619	2,619	2,619	2,619
150	v	0,01741	0,01794	0,01845	0,01895	0,01943	0,01989	0,02035	0,02080	0,02123	0,02166	0,02208	0,02250
	k	1,2820	1,2830	1,2830	1,2820	1,2820	1,2815	1,2800	1,2800	1,2790	1,2783	1,2783	1,2770
	C	2,621	2,622	2,622	2,621	2,621	2,621	2,620	2,620	2,619	2,619	2,619	2,618
155	v	0,01669	0,01721	0,01772	0,01820	0,01868	0,01913	0,01958	0,02002	0,02045	0,02087	0,02128	0,02169
	k	1,2830	1,2850	1,2840	1,2840	1,2830	1,2820	1,2810	1,2805	1,2800	1,2783	1,2783	1,2783
	C	2,622	2,624	2,623	2,623	2,622	2,621	2,621	2,620	2,620	2,619	2,619	2,619
160	v	0,01601	0,01653	0,01703	0,01751	0,01797	0,01842	0,01886	0,01929	0,01971	0,02013	0,02053	0,02093
	k	1,2850	1,2860	1,2860	1,2850	1,2850	1,2820	1,2830	1,2820	1,2800	1,2790	1,2780	1,2790
	C	2,624	2,624	2,624	2,624	2,624	2,621	2,622	2,621	2,620	2,619	2,619	2,619
165	v	0,01537	0,01588	0,01638	0,01685	0,01731	0,01775	0,01819	0,01861	0,01902	0,01943	0,01982	0,02021
	k	1,2860	1,2860	1,2870	1,2860	1,2860	1,2840	1,2840	1,2830	1,2820	1,2820	1,2810	1,2790
	C	2,624	2,624	2,625	2,624	2,624	2,623	2,623	2,622	2,621	2,621	2,621	2,619
170	v	0,01476	0,01527	0,01576	0,01623	0,01668	0,01712	0,01755	0,01797	0,01837	0,01877	0,01916	0,01954
	k	1,2880	1,2870	1,2870	1,2870	1,2870	1,2850	1,2860	1,2850	1,2830	1,2820	1,2820	1,2810
	C	2,626	2,625	2,625	2,625	2,625	2,624	2,624	2,624	2,622	2,621	2,621	2,621
175	v	0,01419	0,01470	0,01518	0,01565	0,01610	0,01653	0,01695	0,01736	0,01776	0,01851	0,01853	0,01891
	k	1,2880	1,2880	1,2890	1,2880	1,2880	1,2870	1,2860	1,2850	1,2860	1,2840	1,2840	1,2810
	C	2,626	2,626	2,626	2,626	2,626	2,625	2,624	2,624	2,624	2,622	2,622	2,621
180	v	0,01365	0,01416	0,01464	0,01510	0,01554	0,01597	0,01638	0,01678	0,01718	0,01756	0,01794	0,01831
	C	1,2890	1,2890	1,2890	1,2890	1,2890	1,2880	1,2870	1,2870	1,2870	1,2850	1,2840	1,2830
	C	2,626	2,626	2.626	2,626	1,626	1,626	1,625	2,625	2,624	2,624	2,623	2,622
185	v	0,01314	0,01364	0,01412	0,01457	0,01501	0,01543	0,01584	0,01624	0,01663	0,01701	0,01738	0,01774
	k	1,2890	1,2890	1,2895	1,2895	1,2895	1,2895	1,2880	1,2870	1,2860	1,2860	1,2860	1.2850
	C	2,626	2,626	2,627	2,627	2,627	2,627	2,626	2,625	2,624	2,624	2,624	2,624

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 120-185 bar
Temperature : 550°C – 600 °C

Superheated steam temperature in degrees Celsius

PRESS bar a.	Temp >	550	560	570	580	590	600
120	v	0,02926	0,02973	0,03021	0,03068	0,03114	0,03160
	k	1,2730	1,2730	1,2720	1,2710	1,2700	1,2685
	C	2,615	2,615	2,614	2,613	2,613	2,612
125	v	0,02799	0,02845	0,02891	0,02936	0,02981	0,03026
	k	1,2730	1,2730	1,2740	1,2720	1,2700	1,2695
	C	2,615	2,615	2,616	2,614	2,613	2,612
130	v	0,02682	0,02727	0,02771	0,02815	0,02859	0,02902
	k	1,2745	1,2735	1,2730	1,2720	1,2710	1,2700
	C	2,616	2,615	2,615	2,614	2,613	2,613
135	v	0,02573	0,02617	0,02660	0,02703	0,02745	0,02787
	k	1,2745	1,2745	1,2800	1,2770	1,2720	1,2700
	C	2,616	2,616	2.620	2,618	2,614	2,613
140	v	0,02472	0,02515	0,02557	0,02598	0,02640	0,02680
	k	1,2750	1,2745	1,2740	1,2760	1,2716	1,2715
	C	2,616	2,616	2,616	2,617	2,614	2.614
145	v	0,02378	0,02420	0,02461	0,02501	0,02541	0,02581
	k	1,2760	1,2750	1,2745	1,2740	1,2725	1,2720
	C	2,617	2,616	2,616	2,616	2,615	2,614
150	v	0,02291	0,02331	0,02371	0,02411	0,02450	0,02488
	k	1,2800	1,2760	1,2750	1.2745	1,2730	1,2700
	C	2,620	2,617	2,616	2,616	2,615	2,613
155	v	0,02209	0,02248	0,02287	0,02326	0,02364	0,02402
	k	1,2770	1,2765	1,2755	1,2750	1,2745	1,2730
	C	2.618	2.618	2,617	2,616	2,616	2,615
160	v	0,02132	0,02171	0,02209	0,02246	0,02284	0,02320
	k	1,2780	1,2780	1,2770	1,2750	1,2750	1,2740
	C	2,619	2,619	2,618	2,616	2,616	2,616
165	v	0,02060	0,02098	0,02135	0,02172	0,02208	0,02244
	k	1,2780	1,2780	1,2770	1,2750	1,2750	1,2740
	C	2.619	2,619	2,618	2,616	2,616	2,616
170	v	0,01992	0,02029	0,02065	0,02101	0,02137	0,02172
	k	1,2790	1,2780	1,2780	1,2770	1,2750	1,2740
	C	2,619	2,619	2,619	2,618	2,616	2,616
175	v	0,01928	0,01964	0,02000	0,02035	0,02070	0,02104
	k	1,2800	1,2800	1,2780	1,2780	1,2760	1,2750
	C	2,620	2,620	2,619	2,619	2,617	2,616
180	v	0,01867	0,01903	0,01938	0,01972	0,02007	0,02040
	C	1,2820	1,2800	1,2790	1,2790	1,2770	1,2760
	C	2,621	2,620	2,619	2,619	2,618	2,617
185	v	0,01810	0,01845	0,01879	0,01913	0,01947	0,01980
	k	1,2820	1,2810	1,2820	1,2800	1,2780	1,2770
	C	2,621	2,621	2,621	2,620	2,619	2,618

Use linear interpolation for intermediate values

"to be continued"

Table 1 — Steam data (continued)

Pressure : 190-220 bar
Temperature : Saturated 600°C

Superheated steam temperature in degrees Celsius

Bar a.	SAT TEMP C	Sat. steam	Temp >	370	380	390	400	410	420	430	440	450	460	470
190	361,43	0,006677	V	0,006677	0,009230	0,01016	0,01089	0,01153	0,01211	0,01265	0,01315	0,01362	0,01408	0,01451
		0,808	K	0,820	1,0332	1,2820	1,2870	1,2900	1,2900	1,2900	1,2900	1,2900	1,2900	1,2900
		2,206	C	2,219	2,424	2,612	2,625	2,627	2,627	2,627	2,627	2,627	2,627	2,627
195	363,59	0,006278	V	0,006278	0,008767	0,009663	0,01041	0,01106	0,01164	0,01218	0,01268	0,01315	0,01360	0,01403
		0,794	K	0,800	0,989	1,2840	1,2890	1,2900	1,2940	1,2930	1,2920	1,2920	1,2900	1,2930
		2,191	C	2,198	2,385	2,623	2,626	2,627	2,630	2,629	2,629	2,629	2,627	2,629
200	365,70	0,005877	V	0,005877	0,008246	0,009181	0,009947	0,01061	0,01120	0,01174	0,01224	0,01271	0,01315	0,01358
		0,780	K	0,795	0,9432	1,2880	1,2910	1,2950	1,2950	1,2940	1,2950	1,2960	1,2940	1,2940
		2,176	C	2,193	2,342	2,626	2,628	2,631	2,630	2,630	2,631	2,631	2,630	2,630
210	369,78	0,005023	V	-	0,005023	0,008257	0,009071	0,009758	0,01036	0,01090	0,01141	0,01187	0,01232	0,01274
		0,760	K	-	0,755	1,0265	1,2980	1,2990	1,2990	1,3000	1,3000	1,2990	1,2990	1,2990
		2,154	C	-	2,148	2,418	2,633	2,634	2,634	2,634	2,634	2,634	2,634	2,634
220	273,69	0,003728	V	-	0,003728	0,007377	0,008251	0,008969	0,009588	0,01014	0,01064	0,01111	0,01155	0,01197
		0,730	K	-	0,690	1,0688	1,3010	1,3030	1,3060	1,3040	1,3080	1,3050	1,3020	1,3000
		2,120	C	-	2,072	2,455	2,635	2,636	2,639	2,637	2,640	2,638	2,636	2,634

Use linear interpolation for intermediate values

Superheated steam temperature in degrees Celsius

PRESS Bar a.	Temp >	480	490	500	510	520	530	540	550	560	570	580	590	600
190	v	0,01493	0,01533	0,01573	0,01611	0,01648	0,01685	0,01720	0,01755	0,01790	0,01824	0,01857	0,01890	0,01922
	k	1,2910	1,2890	1,2890	1,2870	1,2870	1,2860	1,2840	1,2830	1,2830	1,2820	1,2810	1,2800	1,2780
	C	2,628	2,626	1,626	1,627	2,625	2,624	2,623	2,622	2,622	2,621	2,621	2,620	2,619
195	v	0,01445	0,01485	0,01524	0,01561	0,01598	0,01634	0,01669	0,01704	0,01738	0,01771	0,01804	0,01836	0,01868
	k	1,2930	1,2900	1,2890	1,2890	1,2880	1,2880	1,2870	1,2850	1,2840	1,2830	1,2840	1,2820	1,2780
	C	2,629	2,629	2,629	2,626	2,626	2,626	2,625	2,624	2,623	2,622	2,623	2,621	2,619
200	v	0,01399	0,01439	0,01477	0,01514	0,01551	0,01586	0,01621	0,01655	0,01688	0,01721	0,01753	0,1785	0,01816
	k	1,2940	1,2910	1,2900	1,2900	1,2880	1,2880	1,2880	1,2860	1,2850	1,2850	1,2840	1,2830	1,2800
	C	2,630	2,628	2,627	2,627	2,626	1,626	1,626	2,624	2,624	2,624	2,623	2,622	2,620
210	v	0,01314	0,01353	0,01391	0,01427	0,01463	0,01497	0,01531	0,01564	0,01596	0,01628	0,01659	0,01690	0,01720
	k	1,2980	1,2950	1,2950	1,2930	1,2900	1,2900	1,2900	1,2890	1,2830	1,2870	1,2860	1,2850	1,2840
	C	2,626	2,631	2,634	2,629	2,627	2,627	2,627	2,626	2,622	2,625	2,624	2,624	2,623
220	v	0,01237	0,01275	0,01312	0,01348	0,01382	0,01416	0,01449	0,01481	0,01512	0,01543	0,01574	0,01603	0,01633
	k	1,3000	1,2990	1,2980	1,2960	1,2950	1,2920	1,2910	1,2900	1,2880	1,2880	1,2880	1,2870	1,2850
	C	2,634	2,634	2,632	2,631	2,631	2,629	2,628	2,627	2,626	2,626	2,626	2,625	2,624

Use linear interpolation for intermediate values

Table 2 — Value of *C* as a function of *k*

k	C	k	C	k	C	k	C	k	C	k	C	k	C	k	C	k	C
0,40	1,647	0,60	1,957	0,80	2,198	1,00	2,401	1,20	2,560	1,40	2,703	1,60	2,829	1,80	2,940	2,00	3,039
0,41	1,665	0,61	1,971	0,81	2,209	1,01	2,404	1,21	2,568	1,41	2,710	1,61	2,843	1,81	2,945	2,01	3,044
0,42	1,682	0,62	1,984	0,82	2,219	1,02	2,412	1,22	2,570	1,42	2,717	1,62	2,840	1,82	2,950	2,02	3,049
0,43	1,700	0,63	1,997	0,83	2,230	1,03	2,421	1,23	2,583	1,43	2,723	1,63	2,846	1,83	2,955	2,03	3,053
0,44	1,717	0,64	2,010	0,84	2,240	1,04	2,430	1,24	2,591	1,44	2,730	1,64	2,852	1,84	2,960	2,04	3,058
0,45	1,733	0,65	2,023	0,85	2,251	1,05	2,439	1,25	2,598	1,45	2,736	1,65	2,858	1,85	2,965	2,05	3,063
0,46	1,750	0,66	2,035	0,86	2,261	1,06	2,447	1,26	2,605	1,46	2,743	1,66	2,863	1,86	2,971	2,06	3,067
0,47	1,766	0,67	2,048	0,87	2,271	1,07	2,456	1,27	2,613	1,47	2,749	1,67	2,869	1,87	2,976	2,07	3,072
0,48	1,782	0,68	2,060	0,88	2,281	1,08	2,464	1,28	2,620	1,48	2,755	1,68	2,874	1,88	2,981	2,08	3,076
0,49	1,798	0,69	2,072	0,89	2,291	1,09	2,472	1,29	2,627	1,49	2,762	1,69	2,880	1,89	2,986	2,09	3,081
0,50	1,813	0,70	2,084	0,90	2,301	1,10	2,481	1,30	2,634	1,50	2,768	1,70	2,886	1,90	2,991	2,10	3,085
0,51	1,829	0,71	2,096	0,91	2,311	1,11	2,489	1,31	2,641	1,51	2,774	1,71	2,891	1,91	2,996	2,11	3,090
0,52	1,844	0,72	2,108	0,92	2,320	1,12	2,497	1,32	2,649	1,52	2,780	1,72	2,897	1,92	3,001	2,12	3,094
0,53	1,858	0,73	2,120	0,93	2,330	1,13	2,505	1,33	2,656	1,53	2,786	1,73	2,902	1,93	3,006	2,13	3,099
0,54	1,873	0,74	2,131	0,94	2,339	1,14	2,513	1,34	2,663	1,54	2,793	1,74	2,908	1,94	3,010	2,14	3,103
0,55	1,888	0,75	2,143	0,95	2,349	1,15	2,521	1,35	2,669	1,55	2,799	1,75	2,913	1,95	3,015	2,15	3,107
0,56	1,902	0,76	2,154	0,96	2,358	1,16	2,529	1,36	2,676	1,56	2,805	1,76	2,918	1,96	3,020	2,16	3,112
0,57	1,916	0,77	2,165	0,97	2,367	1,17	2,537	1,37	2,683	1,57	2,811	1,77	2,924	1,97	3,025	2,17	3,116
0,58	1,930	0,78	2,170	0,98	2,376	1,18	2,545	1,38	2,690	1,58	2,817	1,78	2,929	1,98	3,030	2,18	3,121
0,59	1,944	0,79	2,187	0,99	2,386	1,19	2,553	1,39	2,697	1,59	2,823	1,79	2,934	1,99	3,034	2,19	3,125
																2,20	3,129

Table 3 — Capacity correction factors for back pressure (K_b)

< k p_b/p_o	2,2	2,1	2,0	1,9	1,8	1,7	1,6	1,5	1,4	1,3	1,2	1,1	1,001	0,9	0,8	0,7	0,6	0,5	0,4
0,45	0,999	0,999	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,50	0,989	0,992	0,994	0,996	0,998	0,999	1,000	-	-	-	-	-	-	-	-	-	-	-	-
0,55	0,971	0,975	0,979	0,983	0,987	0,991	0,994	0,997	0,999	1,000	-	-	-	-	-	-	-	-	-
0,60	0,945	0,950	0,955	0,961	0,967	0,972	0,978	0,983	0,989	0,993	0,997	0,999	1,000	-	-	-	-	-	-
0,65	0,909	0,915	0,922	0,929	0,936	0,944	0,951	0,959	0,967	0,974	0,982	0,989	0,995	0,999	0,999	-	-	-	-
0,70	0,864	0,871	0,879	0,886	0,895	0,903	0,913	0,922	0,932	0,943	0,953	0,964	0,975	0,985	0,993	0,999	0,999	-	-
0,75	0,808	0,815	0,824	0,832	0,841	0,851	0,861	0,872	0,884	0,896	0,909	0,923	0,938	0,953	0,968	0,983	0,995	1,000	-
0,80	0,739	0,747	0,755	0,764	0,773	0,783	0,794	0,806	0,819	0,833	0,847	0,864	0,881	0,900	0,921	0,942	0,965	0,985	0,999
0,82	0,707	0,715	0,723	0,732	0,741	0,752	0,763	0,774	0,787	0,801	0,817	0,833	0,852	0,672	0,894	0,918	0,944	0,970	0,992
0,84	0,672	0,680	0,688	0,697	0,706	0,716	0,727	0,739	0,752	0,766	0,782	0,799	0,818	0,839	0,862	0,888	0,917	0,948	0,979
0,86	0,634	0,641	0,649	0,658	0,677	0,677	0,688	0,700	0,712	0,727	0,742	0,759	0,779	0,800	0,825	0,852	0,884	0,919	0,957
0,88	0,592	0,599	0,606	0,615	0,624	0,633	0,644	0,655	0,668	0,682	0,697	0,714	0,733	0,755	0,780	0,809	0,842	0,881	0,924
0,90	0,544	0,551	0,558	0,566	0,575	0,584	0,594	0,605	0,617	0,631	0,645	0,662	0,681	0,703	0,728	0,757	0,791	0,831	0,880
0,92	0,490	0,497	0,504	0,511	0,519	0,527	0,537	0,547	0,559	0,571	0,585	0,601	0,619	0,640	0,664	0,693	0,727	0,769	0,820
0,94	0,428	0,434	0,440	0,446	0,453	0,461	0,470	0,479	0,489	0,501	0,514	0,528	0,545	0,565	0,587	0,614	0,647	0,687	0,739
0,96	0,352	0,357	0,362	0,367	0,373	0,380	0,387	0,395	0,404	0,414	0,425	0,438	0,452	0,469	0,489	0,513	0,542	0,579	0,628
0,98	0,251	0,254	0,258	0,262	0,266	0,271	0,277	0,282	0,289	0,296	0,305	0,314	0,325	0,337	0,353	0,371	0,393	0,422	0,462
1,00	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

Bottom header (k >, p_b/p_o): 0,4 | 0,5 | 0,6 | 0,7 | 0,8 | 0,9 | 1,001 | 1,1 | 1,2 | 1,3 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 | 2,1 | 2,2

Table 4 — Properties of gases

Gas	Symbol	Molecular Mass M kg/kmol	Isentropic exponent k at 1,013 bar, absolute and 15°C	Critical Pressure bar a. p_c	Critical temperature K T_c	Critical Pressure Ratio
Acetylene	C_2H_2	26,02	1,26	62,82	309,15	0,553
Air	-	28,96	1,40	37,69	132,45	0,528
Ammonia	NH_3	17,03	1,31	112,98	405,55	0,544
Argon	A (or Ar)	39,91	1,66	48,64	151,15	0,488
n-Butane	C_4H_{10}	58,08	1,11	36,48	426,15	0,583
Carbon dioxide	CO_2	44,00	1,30	73,97	304,25	0,546
Carbon monoxide	CO	28,00	1,40	35,46	134,15	0,528
Chlorine	Cl_2	70,91	1,35	77,11	417,15	0,537
Chlorodiflouromethane (R22)	$CHClF_2$	86,47	1,18	49,14	370,15	0,568
Ethane	C_2H_6	30,05	1,22	49,45	305,25	0,561
Ethylene	C_2H_4	28,03	1,25	51,57	282,85	0,555
Hydrogen	H_2	2,015	1,41	12,97	33,25	0,527
Hydrogen chloride	HCl	36,46	1,41	82,68	324,55	0,527
Hydrogen sulphide	H_2S	34,08	1,32	90,08	373,55	0,542
Isobutane	$CH(CH_3)_3$	58,08	1,11	37,49	407,15	0,583
Methane	CH_4	16,03	1,31	46,41	190,65	0,544
Methyl chloride	CH_3Cl	50,48	1,28	66,47	416,25	0,549
Nitrogen	N_2	28,02	1,40	33,94	126,05	0,528
Nitous oxide	N_2O	44,02	1,30	72,65	309,65	0,546
Oxygen	O_2	32,00	1,40	50,36	154,35	0,528
Propane	C_3H_8	44,06	1,13	43,57	368,75	0,579
Propylene	C_3H_6	42,05	1,15	46,60	365,45	0,574
Suphur dioxide	SO_2	64,07	1,29	78,73	430,35	0,548
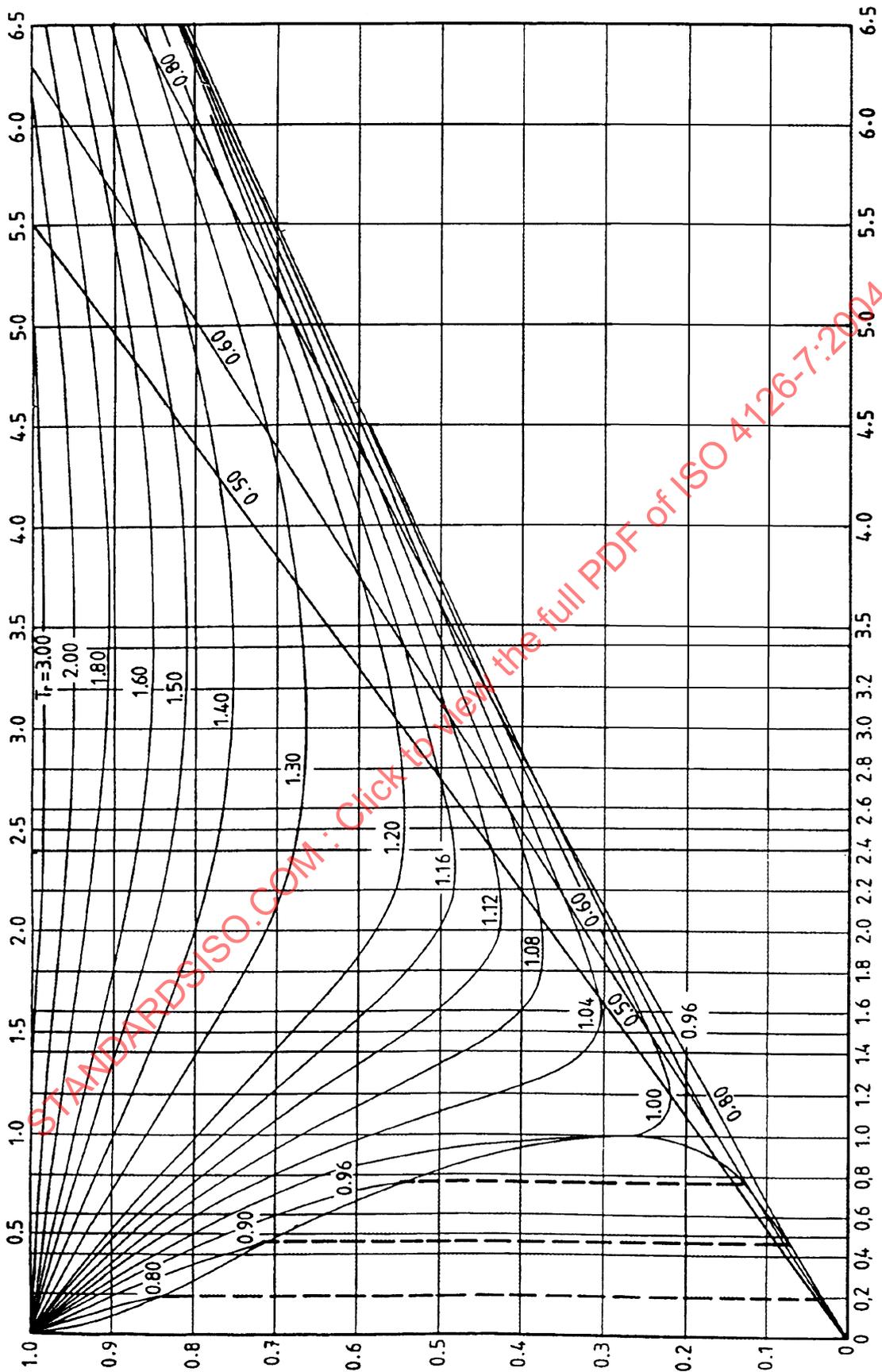
NOTE P_r is the reduced pressure and Z is the compressibility factor.

Figure 1 — Estimating chart for compressibility factor, Z

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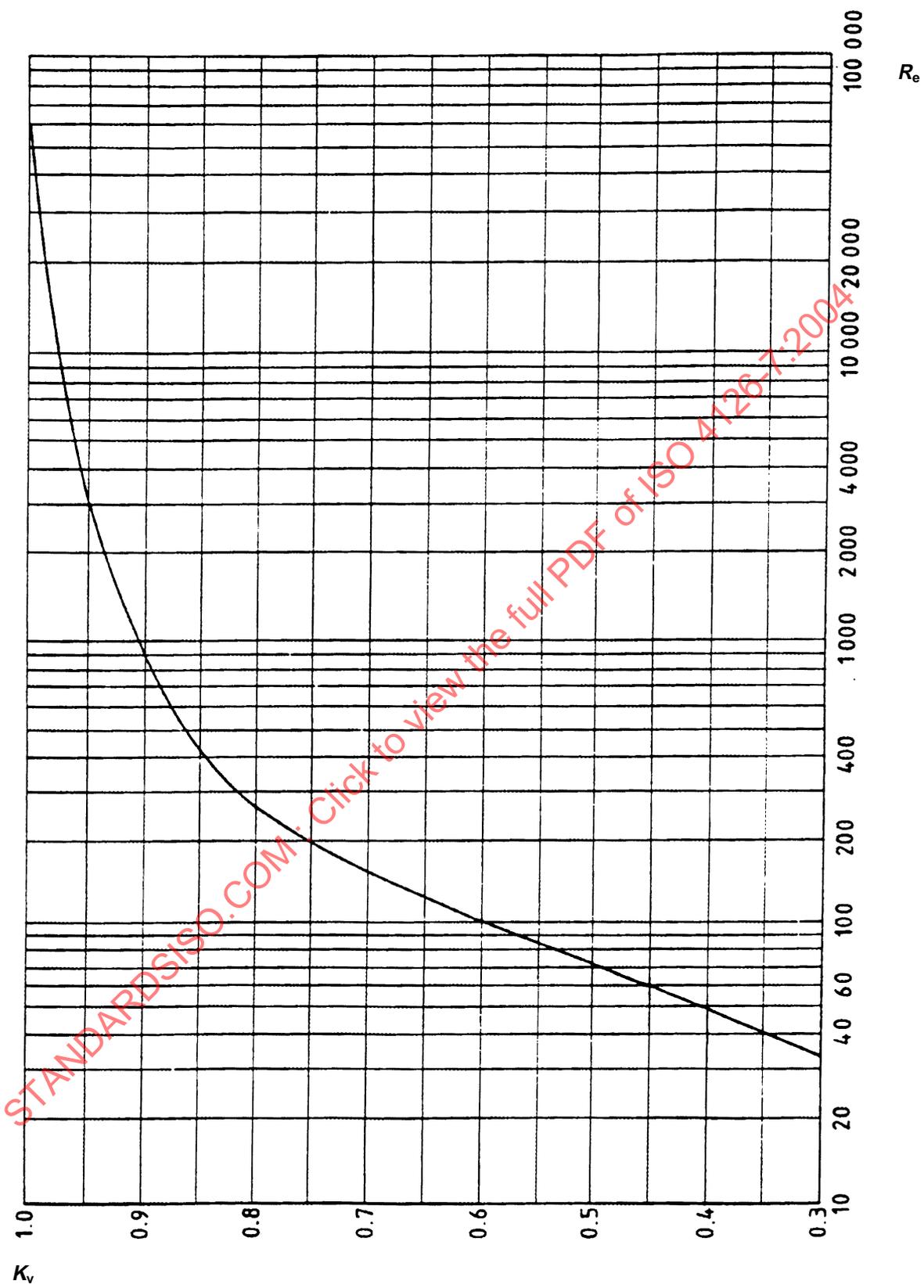
NOTE K_v is the capacity correction factor for viscosity and R_e is Reynolds number.

Figure 2 — Capacity correction factor for viscosity, K_v

4 Minimum requirements for helical compression springs

4.1 General

The spring manufacturer shall be in a position, if so requested, to supply a certificate stating that the springs have been made from the prescribed material, and have been tested in accordance with this standard.

The allowable stresses shall be based on previous satisfactory experience and the current understanding of the behaviour of spring materials taking into consideration the temperature of the spring, the environment and the amount of relaxation, which is permissible in service.

NOTE   Where appropriate, the hardness should be specified by the purchaser.

4.2 Materials

Safety valve spring materials shall be suitable for the intended service conditions.

4.3 Marking

Springs shall be marked by suitable means to ensure positive identification. When the identification method is metal stamping or etching, it shall be confined to the inactive coils.

In the case of stock springs, when the above is not practicable, identification shall be by a tag or other suitable method.

4.4 Dimensions

4.4.1   Proportion

The proportion of the unloaded length to the mean diameter of the spring shall not exceed five to one.

4.4.2   Spring index

The spring index, i.e. the mean diameter of the coil divided by the diameter of the section, shall be within the range 3 to 12.

4.4.3   Coil spacing

The pitch of the coils shall be regular. The spring compression shall be no greater than 80 % of the nominal (calculated) deflection from the free length to the solid length.

4.4.4   End coils

Springs with nominally parallel ends shall have both ends of each spring closed against the adjacent full coils, and ground.

The ends of the springs shall present a flat bearing surface of between 270° and 300° of the circumference at right angles to the axis (see Figure 3e), so that when placed on end on a horizontal plane the springs shall be within the limits shown in Figures 3a and 3c.

Smooth consistent tapers to smooth edges shall be provided with a coil tip thickness approximately equal to one quarter of the section (bar/wire) diameter.

The end coils shall not encroach upon the specified inside and outside diameters (see Figure 3e).

Springs with other than nominally parallel ends are allowed if the criteria for springs with nominally parallel ends are met when the spring plate(s)/button(s) is (are) fitted (see Figures 3b and 3d).

4.5 Spring plates/buttons

The spring plates/buttons shall have a location, which allows the spring to rotate freely.

4.6 Inspection, testing and tolerances

4.6.1 Permanent set

All springs shall be tested for permanent set. The permanent set of the spring is defined as the change in the spring's free length as a result of a series of compression cycles to solid in accordance with the safety valve manufacturer's specification or other appropriate standard. The spring shall be compressed to solid at least three times before determining the initial free length. The spring shall then be compressed to solid at least three more times before measuring the final free length. The permanent set shall not exceed 0,5 % of the initial free length.

4.6.2 Dimensional checks

Each spring shall be subjected to the following minimum checks:

a) load/length at the maximum compression at which the spring will be used, or the spring rate over a given range below 80 % of the calculated total deflection, in the linear range ;

b) dimensional check of coil diameter and free length ;

c) dimensional check for end squareness; by standing the spring on a surface plate against a square and measuring the maximum deviation between the top end coil and the square ;

With springs having nominally parallel ends this shall be repeated with the spring reversed end for end (see Figures 3a and 3b).

d) dimensional check for end parallelism, where appropriate; by standing the spring on a surface plate and measuring the difference between the levels of the lowest and highest points of the surface of the upper end.

These measurements shall be repeated with the spring reversed end for end where applicable (see Figures 3a and 3b).

The constants 'e' and 'f' in Figure 3 are to be determined by the valve manufacturer.
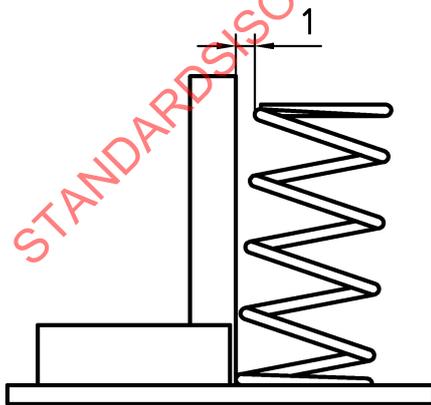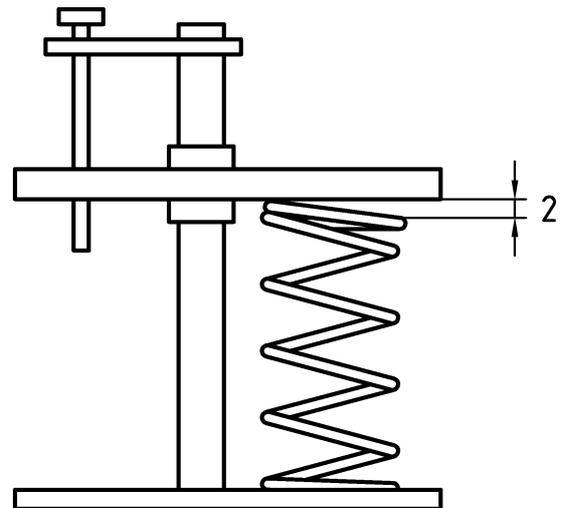

Figure 3a)

Figure 3c)