
International Standard



4200

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length

Tubes lisses en acier, soudés et sans soudure — Tableaux généraux des dimensions et des masses linéiques

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4200 was prepared by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*.

This third edition cancels and replaces the second edition (ISO 4200-1981), of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length

0 Introduction

This International Standard has two main purposes :

- to give guidance on the selection of sizes for all activities concerned with the standardization of steel tubes, both nationally and internationally;
- to serve as a ready reckoner and to avoid the use by different countries of different masses for a tube of the same size.

1 Scope and field of application

This International Standard gives tables of dimensions in millimetres and the masses per unit length in kilograms per metre of plain end steel tubes.

It covers two groups of tubes :

- Group 1 : tubes for general purpose use (see table 2);
- Group 2 : precision tubes (see table 3).

The outside diameters are classified into three series for group 1 and into two series for group 2.

The classification of outside diameters and the selection of preferred thicknesses offers information on which tube dimensions should be selected for national and international standards for either general purposes or particular use and application. The use of this information will ensure the selection of the most favourable dimensions for particular purposes.

It should be noted that the inclusion in the tables of a mass for a given size of tube, which does not have a series 1 outside diameter and preferred thickness, does not necessarily mean that it is available.

Should the mass of a tube of dimensions other than those given in the table be required, it has to be calculated by the formula given in clause 5.

This International Standard is not applicable to tubes primarily intended to be screwed in accordance with ISO 7/1. The masses of such tubes, both screwed and plain end, are given in ISO 65.

2 References

ISO 7/1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Designation, dimensions and tolerances.*

ISO 65, *Steel tubes suitable for screwing in accordance with ISO 7/1.*

3 Classification of outside diameters

In International Standards on steel tubes, the outside diameters of tubes are classified into three series defined as follows :

- **Series 1** : Series for which all the accessories needed for the construction of piping systems are standardized.
- **Series 2** : Series for which not all accessories are standardized.
- **Series 3** : Series for special application for which very few standardized accessories exist; some of these diameters may be withdrawn in due course.

4 Selection of preferred dimensions for tubes of group 1

Table 1 gives seven ranges of preferred thicknesses, related to series 1 outside diameters, based upon the principle of isobaric series and applicable to tubes and butt-welding accessories; the three strongest ranges are common to all steel grades. The four ranges of thicknesses D, E, F and G are normally in use for tubular products of non-alloy and alloy steels, and the six

ranges of thicknesses A, B, C, E, F and G are normally in use for stainless steel tubular products.

Table 1 gives a reduced selection of dimensions standardized and available for tubes and accessories; series D, however, is not applicable to butt-welding fittings.

5 Method of calculation of masses per unit length

The values, to at least five significant figures, have been calculated by the formula given below, and then rounded to three significant figures for values below 100, and to the nearest whole number for larger values.

$$M = (D - T) \times T \times 0,024\ 661\ 5^{1)} \text{ kg/m}$$

where

M is the mass per unit length;

D is the specified outside diameter, in millimetres;

T is the specified thickness, in millimetres.

The calculated values may also be applied to tubes of steels having different density values, but they require to be multiplied by a factor

- 1,015 for austenitic stainless steels;
- 0,985 for ferritic and martensitic stainless steels.

These coefficients may be modified or changed in accordance with the studies being carried out in ISO/TC 17, *Steel*.

Table 1 — Dimensions for tubes and accessories

Dimensions in millimetres

Outside diameter Series 1	Preferred thickness for series						
	A	B	C	D	E	F	G
10,2	1,6	—	—	—	1,6	2,0	2,3
13,5	1,6	—	—	1,6	2,0	2,3	2,6
17,2	1,6	—	—	1,6	2,0	2,3	3,2
21,3	1,6	—	—	1,8	2,0	3,2	4,0
26,9	1,6	—	—	1,8	2,0	3,2	4,0
33,7	1,6	2,0	—	2,0	2,3	3,2	4,5
42,4	1,6	2,0	—	2,3	2,6	3,6	5,0
48,3	1,6	2,0	—	2,3	2,6	3,6	5,0
60,3	1,6	2,0	2,3	2,3	2,9	4,0	5,6
76,1	1,6	2,3	2,6	2,6	2,9	5,0	7,1
88,9	2,0	2,3	2,9	2,9	3,2	5,6	8,0
114,3	2,0	2,6	2,9	3,2	3,6	6,3	8,8
139,7	2,0	2,6	3,2	3,6	4,0	6,3	10
168,3	2,0	2,6	3,2	4,0	4,5	7,1	11
219,1	2,0	2,6	3,6	4,5	6,3	8,0	12,5
273	2,0	3,6	4,0	5,0	6,3	10	14,2
323,9	2,6	4,0	4,5	5,6	7,1	10	16
355,6	2,6	4,0	5,0	5,6	8,0	11	17,5
406,4	2,6	4,0	5,0	6,3	8,8	12,5	20
457	3,2	4,0	5,0	6,3	10	14,2	22,2
508	3,2	5,0	5,6	6,3	11	16	25
610	3,2	5,6	6,3	6,3	12,5	17,5	30
711	4,0	6,3	7,1	7,1	14,2	20	32
813	4,0	7,1	8,0	8,0	16	22,2	36
914	4,0	8,0	8,8	10	17,5	25	40
1016	4,0	8,8	10	10	20	28	45
1067	—	8,8	10	11	—	—	—
1118	—	8,8	10	11	—	—	—
1219	—	10	11	12,5	—	—	—
1422	—	12,5	14,2	14,2	—	—	—
1626	—	14,2	16	16	—	—	—
1829	—	14,2	16	17,5	—	—	—
2032	—	16	17,5	20	—	—	—
2235	—	17,5	20	22,2	—	—	—
2540	—	20	22,2	25	—	—	—

NOTE — The preferred thickness listed in series D and E are used particularly for plain end commercial quality steel tubes for general use. The series A, B, C are normally used only for stainless steels but may in certain circumstances be used for other types of steel. In the revision of existing standards or in preparing new standards the same designation of series of thickness shall be used as in table 1.

1) This coefficient takes into account a density equal to 7,85 kg/dm³.

6 Dimensions and masses per unit length

6.1 Group 1

Table 2 gives the dimensions and masses per unit length of tubes for general purpose use and for use as components of piping systems.

Values of masses per unit length printed in heavy type correspond to tubes of series 1 outside diameters and the preferred thicknesses of series A, B, C, D, E, F and G respectively.

For use as components of piping systems, it is recommended to apply only those dimensions given in table 2, series 1 outside diameters.

6.2 Group 2

Table 3 gives the dimensions and masses per unit length of precision tubes.

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Table 2 — Dimensions and masses per unit length, group 1

		Thicknesses, mm																								
		3.2	3.6	4.0	4.5	5.0	5.4	5.6	6.3	7.1	8.0	8.8	10	11	12.5	14.2	16	17.5	20	22.2	25	28	30	32	36	
		Masses per unit length, kg/m																								
0.694																										
0.813	0.879																									
0.852	0.923																									
1.01	1.10	1.18																								
1.10	1.21	1.30	1.41																							
1.17	1.28	1.38	1.50																							
1.25	1.37	1.48	1.61	1.73																						
1.33	1.46	1.58	1.72	1.85																						
1.43	1.57	1.71	1.86	2.01	2.12																					
1.48	1.63	1.78	1.94	2.10	2.21																					
1.72	1.90	2.07	2.28	2.47	2.61	2.68	2.91																			
1.75	1.94	2.11	2.32	2.52	2.66	2.73	2.97																			
1.87	2.07	2.26	2.49	2.70	2.86	2.94	3.20	3.47	3.73																	
2.11	2.34	2.56	2.83	3.08	3.28	3.37	3.68	4.01	4.34																	
2.26	2.50	2.74	3.03	3.30	3.52	3.62	3.96	4.32	4.70																	
2.27	2.52	2.76	3.05	3.33	3.54	3.65	3.99	4.36	4.74																	
2.41	2.67	2.93	3.24	3.54	3.77	3.88	4.26	4.66	5.07	5.40																
2.51	2.79	3.06	3.38	3.70	3.94	4.06	4.46	4.89	5.33	5.69																
2.75	3.05	3.35	3.72	4.07	4.34	4.47	4.93	5.41	5.92	6.34	6.91															
2.90	3.23	3.55	3.94	4.32	4.61	4.75	5.24	5.76	6.31	6.77	7.40															
3.09	3.44	3.79	4.21	4.61	4.93	5.08	5.61	6.18	6.79	7.29	7.99															
3.26	3.63	4.00	4.44	4.87	5.21	5.37	5.94	6.55	7.20	7.75	8.51	9.09	9.86													
3.56	3.97	4.37	4.86	5.34	5.71	5.90	6.53	7.21	7.95	8.57	9.45	10.1	11.0													
3.77	4.21	4.64	5.16	5.67	6.07	6.27	6.94	7.69	8.48	9.16	10.1	10.9	11.9													
4.01	4.47	4.93	5.49	6.04	6.47	6.68	7.41	8.21	9.08	9.81	10.9	11.7	12.8	13.9												
4.25	4.74	5.23	5.83	6.41	6.87	7.10	7.88	8.74	9.67	10.5	11.6	12.5	13.7	15.0												
4.51	5.03	5.55	6.19	6.82	7.31	7.55	8.39	9.32	10.3	11.2	12.4	13.4	14.7	16.1	17.5											
4.76	5.32	5.87	6.55	7.21	7.74	8.00	8.89	9.88	10.9	11.9	13.2	14.2	15.7	17.3	18.7											
5.27	5.90	6.51	7.27	8.01	8.60	8.89	9.90	11.0	12.2	13.3	14.8	16.0	17.7	19.5	21.3	22.7										
5.51	6.16	6.81	7.60	8.38	9.00	9.31	10.4	11.5	12.8	13.9	15.5	16.8	18.7	20.6	22.5	24.0										
5.75	6.44	7.11	7.95	8.77	9.42	9.74	10.8	12.1	13.4	14.6	16.3	17.7	19.6	21.7	23.7	25.3	27.7									
6.26	7.00	7.74	8.66	9.56	10.3	10.6	11.8	13.2	14.7	16.0	17.9	19.4	21.6	23.9	26.2	28.1	30.8	34.0	36.5	39.4						
6.76	7.57	8.38	9.37	10.3	11.1	11.5	12.8	14.3	16.0	17.4	19.5	21.1	23.6	26.2	28.8	30.8	34.0	36.5	39.4	42.7	50.8					
7.77	8.70	9.63	10.8	11.9	12.8	13.3	14.8	16.5	18.5	20.1	22.6	24.6	27.5	30.6	33.8	36.3	40.2	43.5	47.2	51.2	55.2	57.7				
8.27	9.27	10.3	11.5	12.7	13.7	14.1	15.8	17.7	19.7	21.5	24.2	26.3	29.4	32.8	36.3	39.1	43.4	47.0	51.2	55.2	59.6	62.4	64.9			
8.77	9.83	10.9	12.2	13.5	14.5	15.0	16.8	18.8	21.0	22.9	25.7	28.0	31.4	35.1	38.8	41.8	46.5	50.4	55.1	59.6	64.3	68.4	71.8	75.0	80.0	
9.77	11.0	12.1	13.6	15.0	16.2	16.8	18.8	21.0	23.5	25.7	28.9	31.5	35.3	39.5	43.8	47.3	52.8	57.4	62.9	68.4	71.8	75.0	78.0	81.0	86.0	
10.2	11.5	12.7	14.3	15.8	17.0	17.6	19.7	22.0	24.7	27.0	30.3	33.1	37.1	41.6	46.2	49.8	55.7	60.7	66.6	72.5	76.2	79.7	82.6	86.6		
10.8	12.1	13.4	15.0	16.6	17.9	18.5	20.7	23.2	26.0	28.4	32.0	34.9	39.2	43.9	48.8	52.7	59.0	64.3	70.7	77.1	81.2	85.0	89.2	93.0		
10.9	12.2	13.5	15.2	16.8	18.1	18.7	21.0	23.5	26.3	28.8	32.4	35.3	39.7	44.5	49.4	53.4	59.8	65.2	71.7	78.2	82.3	86.3	90.3	94.3		
11.8	13.2	14.6	16.4	18.2	19.6	20.3	22.7	25.4	28.5	31.2	35.1	38.4	43.1	48.4	53.8	58.2	65.3	71.3	78.5	85.9	90.6	95.0	100	103		
12.3	13.8	15.3	17.1	19.0	20.5	21.2	23.7	26.6	29.8	32.6	36.7	40.1	45.2	50.7	56.4	61.1	68.6	74.9	82.6	90.5	95.4	100	109	117		
13.0	14.6	16.2	18.2	20.1	21.7	22.5	25.2	28.2	31.6	34.6	39.0	42.7	48.0	54.0	60.1	65.1	73.1	80.0	88.3	96.9	102	108	117	126		
13.8	15.5	17.1	19.2	21.3	23.0	23.8	26.6	29.9	33.5	36.7	41.4	45.2	51.0	57.3	63.8	69.2	77.8	85.2	94.2	103	109	115	126	135		
15.0	16.9	18.7	21.0	23.3	25.1	26.0	29.1	32.7	36.6	40.1	45.3	49.6	55.9	62.9	70.1	76.0	85.7	93.9	104	114	121	128	140	150		
17.0	19.1	21.2	23.8	26.4	28.5	29.5	33.1	37.1	41.6	45.6	51.6	56.5	63.7	71.8	80.1	87.0	98.2	108	120	132	140	148	163	175		
19.0	21.4	23.7	26.6	29.5	31.8	33.0	37.0	41.6	46.7	51.2	57.8	63.3	71.5	80.6	90.2	98.0	111	122	135	149	159	168	185	200		
21.3	23.9	26.5	29.8	33.0	35.6	36.9	41.4	46.6	52.3	57.3	64.9	71.1	80.3	90.6	101	110	125	137	153	169	180	190	210	230		
25.3	28.4	31.6	35.4	39.3	42.4	44.0	49.3	55.5	62.3	68.4	77.4	84.9	96.0	108	121	132	150	165	184	204	217	230	256	284		
27.8	31.3	34.7	39.0	43.2	46.6	48.3	54.3	61.0	68.6	75.3	85.2	93.5	106	120	134	146	166	183	204	226	241	255	284	315		
31.8	35.8	39.7	44.6	49.5	53.4	55.4	62.2	69.9	78.6	86.3	97.8	107	121	137	154	168	191	210	235	261	278	295	329	369		
35.8	40.3	44.7	50.2	55.7	60.1	62.3	70.0	78.8	88.6	97.3	110	121	137	155	174	190	216	238	266	296	316	335	374	419		
39.8	44.8	49.7	55.9	62.0	66.9	69.4	77.9	87.7	98.6	108	123	135	153	173	194	212	241	266	298	331	354	376	419	464		
43.9	49.3	54.7	61.5	68.3	73.7	76.4	85.9	96.6	109	119	135	149	168	191	214	234	266	294	329	367	391	416	464	510		
47.9	53.8	59.8	67.2	74.6	80.5	83.5	93.8	106	119	130	148	162	184	209	234	256	291	322	361	402	429	456	510	554		
		64.7	72.7	80.8	87.2	90.4	102	114	129	141	160	176	200	226	254	277	316	349	392	436	466	496	554	601		
		69.7	78.4	87.1	94.0	97.4	109	123	139	152	173	190	215	244	274	299	341	377	423	472	504	536	599	645		
		74.8	84.1	93.3	101	104	117	132	149	163	185	204	231	262	294	321	366	405	454	507	542	576	645	690		
		79.8	89.7	99.6	108	112	125	141	159	175	198	218	247	280	314	343	391	433	486	542	579	616	690	735		
		84.8	95.4	106	114	119	133	150	169	186	211	231	262	298	335	365	416	461	517	577	617	657	735	780		
		89.8	101	112	121	125	141	159	179	196	223	245	278	315	354	387	441	488	548	612	654	696	780	826		
		94.8	112	125	135	140	157	177	199	219	248	273	309	351	395	431	491	544	611	682	729	777	870	915		
			131	141	147	165	186	209	230	261	286	325	369	415	453	516	572	642	717	767	817	915	961	1050		
			137	148	154	173	195	219	241	273	300	341	387	435	475	542	600	674	753</							

