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Stainless steel tubes — Dimensions, tolerances and conventional masses per unit length

The European Standard EN ISO 1127:1996 has the status of a
British Standard

ICS 23.040.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ISE/8, Steel pipes, upon which the following bodies were represented:

Adhesive Tape Manufacturers' Association
 British Compressed Air Society
 British Iron and Steel Producers' Association
 British Malleable Tubes Fittings Association
 British Stainless Steel Association
 British Valve and Actuator Manufacturers' Association
 British Welded Steel Tube Association
 Engineering Equipment and Materials Users' Association
 Food and Drink Federation
 Institution of Civil Engineers
 Institution of Gas Engineers
 Institution of Water and Environmental Management
 Large Diameter Steel Tube Association
 Mechanical Handling Engineers' Association
 National Association of Plumbing, Heating and Mechanical Services
 Contractors
 Seamless Steel Tube Association
 Steel Construction Institute
 Steel Tube Fittings Manufacturers' Technical Association
 Society of Motor Manufacturers and Traders Ltd.
 Water Companies Association
 Water Services Association of England and Wales
 Co-opted member

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National foreword

This British Standard has been prepared by Technical Committee ISE/8 *Stainless steel tubes — Dimensions, tolerances and conventional masses per unit length*, and is the English language version of EN ISO 1127:1996, published by the European Committee for Standardization (CEN). It is identical with ISO 1127:1992, prepared by ISO/TC 5, Ferrous metal pipes and metallic fittings, of the International Organization for Standardization (ISO) with the active participation of the UK.

It supersedes certain specifications in BS 3600:1976 which are deleted by amendment.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 8 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

ICS 23.040.10

Descriptors: Piping, stainless steels, austenitic steels, ferritic steels, martensitic steels, steel tubes, dimensions, dimensional tolerances, linear density

English version

Stainless steel tubes — Dimensions, tolerances and conventional masses per unit length

(ISO 1127:1992)

Tubes en acier inoxydable — Dimensions, tolérances et masses linéiques conventionnelles (ISO 1127:1992)

Nichtrostende Stahlrohre — Masse, Grenzabmasse und längenbezogene Masse (ISO 1127:1992)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 5, Ferrous metal pipes and metallic fittings, of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee ECISS/TC 29, Steel tubes and fittings for steel tubes, the secretariat of which is held by UNI.

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 October 1996, and conflicting standards shall be withdrawn at the latest by October 1996.

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

1 Scope

This International Standard specifies the diameters, thicknesses, tolerances and conventional masses per unit length of stainless steel tubes.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards. ISO 5252:1991, *Steel tubes — Tolerance systems*.

3 Dimensions

The outside diameters and thicknesses of the tubes specified in this International Standard have been selected from ISO 4200. If thicknesses greater than 14,2 mm are needed, they should be chosen from ISO 4200.

4 Tolerances

The tolerances permitted on the outside diameter and thickness of the tubes result from the method of manufacture, the steel types and the heat treatment. The tolerances shall be selected from the values given in Table 1 and Table 2.

4.1 Tolerances on outside diameter

See Table 1.

Table 1 — Tolerances on outside diameter

Tolerance class	Tolerance on outside diameter
D ₁	± 1,5 % with ± 0,75 mm min.
D ₂	± 1 % with ± 0,5 mm min.
D ₃	± 0,75 % with ± 0,3 mm min.
D ₄	± 0,5 % with ± 0,1 mm min.

The tolerances on outside diameter include ovality.

4.2 Tolerances on thickness

See Table 2.

Table 2 — Tolerances on thickness

Tolerance class	Tolerance on thickness
T ₁	± 15 % with ± 0,6 mm min.
T ₂	± 12,5 % with ± 0,4 mm min.
T ₃	± 10 % with ± 0,2 mm min.
T ₄	± 7,5 % with ± 0,15 mm min.
T ₅	± 5 % with ± 0,1 mm min.

The tolerances on thickness include eccentricity.

4.3 Other tolerances

For tolerances on dimensions other than outside diameter and thickness, reference shall be made to ISO 5252.

5 Conventional masses per unit length

The conventional masses per unit length given in Table 3 for austenitic stainless steel tubes are the masses given in ISO 4200 multiplied by a factor of 1,015. This factor assumes an average density for these tubes of 7,97 kg/dm³.

The conventional masses per unit length given in Table 4 for ferritic and martensitic stainless steel tubes are the masses given in ISO 4200 multiplied by a factor of 0,985. This factor assumes an average density for these tubes of 7,73 kg/dm³.

Table 3 — Conventional masses for austenitic stainless steel tubes

Outside diameter mm			Thickness, mm																				
			1,0	1,2	1,6	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2
Series			Conventional mass per unit length, kg/m																				
1	2	3																					
	6		0,125	0,144																			
	8		0,176	0,204																			
	10		0,225	0,264																			
10,2			0,230	0,270	0,344	0,410																	
	12		0,275		0,416	0,500																	
	12,7		0,293	0,345	0,445	0,536	0,599	0,658	0,711	0,761													
13,5			0,313	0,369	0,477	0,576	0,645		0,769														
		14	0,326		0,496	0,601																	
	16		0,376	0,445	0,577	0,701																	
17,2			0,406		0,625	0,761	0,858			1,12													
		18	0,425		0,657	0,801																	
	19		0,451	0,535	0,697	0,851																	
	20		0,476	0,564	0,737	0,901																	
21,3			0,509		0,789	0,966		1,22		1,45		1,74											
		22	0,526			1,00																	
	25		0,601	0,715	0,937	1,15		1,46															
		25,4		0,727	0,953	1,17		1,48															
26,9			0,649		1,01	1,25		1,58	1,75	1,90		2,29											
		30			1,14	1,40																	
	31,8			0,920	1,21	1,49		1,90		2,29		2,78											
	32			0,925		1,50																	
33,7			0,818	0,976	1,29	1,58	1,81	2,02		2,45		3,29											
		35		1,02		1,65																	
	38			1,11	1,46	1,81		2,30		2,79													
	40			1,17	1,54			2,44															
42,4				1,63	2,02			2,59		3,14	3,49		4,68										
		44,5			2,13			2,73	3,02														

Table 3 — Conventional masses for austenitic stainless steel tubes

Outside diameter mm			Thickness, mm																					
			1,0	1,2	1,6	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2	
Series			Conventional mass per unit length, kg/m																					
1	2	3																						
48,3			1,25	1,49	1,87	2,31		2,97		3,61	4,03			5,42										
	51				1,98	2,46		3,15		3,83														
		54			2,10	2,60		3,35																
	57				2,22	2,75			3,93															
60,3					2,35	2,92	3,34	3,76	4,17	4,58	5,11	5,63			7,66									
	63,5				2,48	3,08		3,96		4,83														
	70				2,74	3,40			4,87															
76,1					2,98	3,70	4,25	4,78	5,32		6,54	7,22		8,90										
		82,5				4,03				6,35														
88,9					3,49	4,35	4,98	5,61	6,24	6,86	7,68	8,51			11,7						16,2			
	101,6				4,98				7,17			9,77			13,5						18,8			
114,3					4,52	5,62		7,27	8,09		9,98		12,4				17,1			23,2				
139,7					5,53	6,89		8,92		11,0		13,6		16,8		21,0	23,5				32,5			
168,3					6,68	8,32		10,8		13,2		16,4	18,5	20,4			28,6					43,3		
219,1						10,9		14,1		17,3	19,4	21,5				33,6			42,2				64,7	
273						13,6		17,6		21,6	24,3	26,9				42,0					65,9		81,5	
323,9								20,9		25,7		32,1	35,9	39,9		56,3					78,6		97,4	
355,6								22,9		28,2		35,2		43,8							86,5	94,9	108	
406,4								26,3		32,3		40,3		50,2							99,3		123	
457										36,3		45,4		56,5							112		139	
508										40,4	45,5			62,9	70,4							137	155	
610										48,6		60,7			84,8	95,2						187	212	
711																	125							
813																		161						
914																			199					
1016																					252			

Table 4 — Conventional masses for ferritic and martensitic stainless steel tubes

Outside diameter mm			Thickness, mm																				
			1,0	1,2	1,6	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2
Series			Conventional mass per unit length, kg/m																				
1	2	3																					
	6		0,121	0,140																			
	8		0,170	0,198																			
	10		0,219	0,256																			
	10,2		0,224	0,262	0,334	0,398																	
	12		0,267		0,404	0,486																	
	12,7		0,285	0,335	0,431	0,520	0,581	0,638	0,690	0,739													
	13,5		0,303	0,359	0,463	0,558	0,625		0,747														
		14	0,316		0,482	0,583																	
	16		0,364	0,431	0,559	0,681																	
	17,2		0,394		0,607	0,739	0,832			1,08													
		18	0,413		0,637	0,777																	
	19		0,437	0,519	0,677	0,825																	
	20		0,462	0,548	0,715	0,875																	
	21,3		0,493		0,765	0,938		1,18		1,41		1,68											
		22	0,510			0,971																	
	25		0,583	0,693	0,909	1,11		1,42															
		25,4		0,705	0,925	1,13		1,44															
	26,9		0,629		0,983	1,21		1,54	1,69	1,84		2,23											
		30			1,10	1,36																	
	31,8			0,892	1,17	1,45		1,84		2,23		2,70											
	32			0,897		1,46																	
	33,7		0,794	0,948	1,25	1,54	1,75	1,96		2,37		3,19											
		35		0,985		1,61																	
	38			1,07	1,42	1,75		2,24		2,71													
	40			1,13	1,50			2,36															
	42,4			1,59	1,96			2,51		3,04	3,39		4,54										

Table 4 — Conventional masses for ferritic and martensitic stainless steel tubes

Outside diameter mm			Thickness, mm																				
			1,0	1,2	1,6	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2
Series			Conventional mass per unit length, kg/m																				
1	2	3																					
		44,5				2,07			2,65	2,94													
48,3			1,21	1,45	1,81	2,25		2,89		3,51	3,91			5,26									
	51				1,92	2,38		3,05		3,71													
		54			2,04	2,52		3,25															
	57				2,16	2,67			3,81														
60,3					2,29	2,84	3,24	3,64	4,05	4,44	4,95	5,47			7,44								
	63,5				2,40	2,98		3,84		4,69													
	70				2,66	3,30			4,73														
76,1					2,90	3,60	4,13	4,64	5,16		6,34	7,00		8,64			11,9						
		82,5			3,91					6,17													
88,9					3,39	4,23	4,84	5,45	6,06	6,66	7,46	8,25			11,3			15,8					
	101,6				4,84				6,95		9,49				13,1			18,2					
114,3					4,38	5,46		7,05	7,85		9,68		12,0			16,5			22,6				
139,7					5,37	6,69		8,66		10,6		13,2		16,4		20,4	22,9			31,5			
168,3					6,48	8,08		10,4		12,8		16,0	17,9	19,8			27,8			42,1			
219,1					10,5			13,7		16,7	18,8	20,9				32,6		41,0				62,7	
273					13,2			17,0		21,0	23,5	26,1				40,8				63,9		79,1	89,2
323,9								20,3		24,9		31,1	34,9	38,7			54,7				76,2		94,6
355,6								22,3		27,4		34,2		42,6						83,9	92,1	104	
406,4								25,5		31,3		39,1		48,8						96,3		119	
457										35,3		44,0		54,9						108		135	153
508										39,2	44,1			61,1	68,4						133	151	170
610										47,2		58,9			82,2	92,4					181	206	
711																	121						
813																		157					
914																			193				
1 016																				244			

Annex A (informative)
Bibliography

[1] ISO 4200:1991, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length.*

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