International Standard 7598

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

Stainless steel tubes suitable for screwing in accordance with ISO 7/1

Tubes en acier inoxydable filetables selon l'ISO 7/1

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Foreword

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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.

International Standard ISO 7598 was developed by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*, and was circulated to the member bodies in May 1981.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	Spain
Belgium	Israel	Sri Lanka
China	Italy	Sweden
Czechoslovakia	Korea, Dem. P. Rep. of	Switzerland
Egypt, Arab Rep. of	Korea, Rep. of	United Kingdom
Finland	Netherlands	USSR
France	Norway	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Brazil
Germany, F.R.
USA

Printed in Switzerland

Stainless steel tubes suitable for screwing in accordance with ISO 7/1

1 Scope and field of application

This International Standard establishes the dimensions and characteristics of seamless and welded austenitic stainless steel tubes with dimensions corresponding to the medium series of ISO 65.

The tubes may be delivered with plain ends or threaded in accordance with ISO 7/1 and fitted with one screwed socket. The limits of application for these tubes may be laid down on a national basis in accordance with the regulations in force in each country.

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.*

ISO 404, *Steel and steel products — General technical delivery requirements.*

ISO 1127, *Stainless steel tubes — Dimensions, tolerances and conventional masses per unit length.*

ISO 2604/2, *Steel products for pressure purposes — Quality requirements — Part 2 : Wrought seamless tubes.*

ISO 2604/5, *Steel products for pressure purposes — Quality requirements — Part 5 : Longitudinally welded austenitic stainless steel tubes.*

ISO 4144, *Stainless steel fittings threaded to ISO 7/1.*

ISO 4200, *Plain end steel tubes, welded and seamless — General tables of dimensions and conventional masses per unit length.*

ISO 6708, *Pipe components — Definition of nominal size.*

3 Calculation of masses

The values for masses for unit length for plain end tubes have been calculated on the basis of the mean of the maximum and minimum diameters given in table 2 and using the basis for calculation as given in ISO 4200 and have been modified for screwed and socketed tubes by an amount based on the mean mass of a socket and a length of 7 m.

4 General requirements

4.1 The tubes shall be made by a seamless or welded process.

4.2 The tubes shall be supplied in the heat-treated condition. The heat-treatment procedure shall consist of heating the tubes at 950 to 1 100 °C and quenching in water or rapidly cooling in air.

4.3 The tubes shall be suitable for fabrication and shaping by normal techniques.

5 Material

The steel shall have a chemical composition and mechanical properties in accordance with ISO 2604/2 and ISO 2604/5.

These standards cover the following steels :

TS 46, TS 47, TS 58, TS 61;

TW 46, TW 47, TW 58, TW 61.

6 Appearance

6.1 The tubes shall have smooth external and internal surfaces, the degree of smoothness depending on the method of manufacture. Unless otherwise agreed in the order, the internal weld bead shall not be removed.

The tubes shall have a workmanlike finish but small imperfections are permissible provided that the thickness remains within the lower tolerance limit.

6.2 Surface imperfections may be dressed provided that the thickness after dressing remains within the lower tolerance limit.

6.3 Peening of surface defects is not permitted.

6.4 The tubes shall be cut nominally square to the axis of the tube, and shall be free from excessive burrs and reasonably straight.

7 Dimensions

7.1 The nominal size DN (see ISO 6708), the thread designation, the specified outside diameter, the thickness and masses per unit length are given in table 1.

7.2 Thread

All screwed tubes shall have threads in accordance with the requirements of ISO 7/1.

The tubes shall be screwed with taper threads and unless otherwise specified, fitted with one screwed socket.

7.3 Sockets

The sockets shall comply with the requirements of ISO 4144, socket M2.

7.4 Random lengths

Unless otherwise specified, random lengths shall be between 4 and 7 m.

8 Tolerances

8.1 On the outside diameter

Tolerances on outside diameter are given in table 2.

8.2 On thickness

+ not limited

– 12,5 %

(– 15 % on isolated areas, on a length not exceeding twice the specified outside diameter, provided this reduction in thickness only affects the external surface.)

8.3 On mass per unit length

± 10 % for each tube;

± 7,5 % per load of 10 t minimum.

9 Testing

9.1 An analysis of each melt of steel shall be made by the steel manufacturer to determine the percentages of the elements specified in ISO 2604/2 and ISO 2604/5.

9.2 The tubes shall be submitted to visual inspection.

9.3 One tensile test shall be made on a test piece for lots of not more than 100 tubes. Tensile tests shall be made on test pieces from two tubes for lots of more than 100 tubes. The test pieces shall be cut out longitudinally from the tube outside the welded area. The mechanical properties shall conform to the requirements in ISO 2604/2 and ISO 2604/5.

NOTE — A lot is a number of tubes of the same diameter, same thickness and same steel grade.

9.4 Each tube shall be tested for leak tightness at the manufacturer's plant.

At the option of the manufacturer, this test shall be either a hydraulic test at a pressure of 50 bar[1] or a non-destructive test which ensures equivalent leak tightness.

9.5 Tubes which do not satisfy the tests shall be deemed not to comply with this International Standard.

10 Designation

The tubes shall be designated by a reference to this International Standard, the nominal size, and the type of end finish (plain end or screwed end), for example :

ISO 7598 tube — TS 46 — DN 20 — screwed and socketed

11 Certificate

11.1 When specified by the purchaser on the order, the manufacturer shall supply a certificate stating that the tubes comply with this International Standard.

11.2 This certificate shall comply with the requirements of clause 5.2.1 of ISO 404.

1) 1 bar = 10^5 Pa

Table 1 — Dimensions

DN	Designation of thread	Outside diameter[1] D mm	Thickness T mm	Masses per unit length M	
				Plain end kg/m	Screwed socketed kg/m
6	1/8	10,2	2,0	0,410	0,413
8	1/4	13,5	2,3	0,644	0,651
10	3/8	17,2	2,3	0,858	0,866
15	1/2	21,3	2,6	1,22	1,24
20	3/4	26,9	2,6	1,58	1,60
25	1	33,7	3,2	2,45	2,49
32	1 1/4	42,4	3,2	3,14	3,19
40	1 1/2	48,3	3,2	3,61	3,68
50	2	60,3	3,6	5,11	5,22
65	2 1/2	76,1	3,6	6,54	6,72
80	3	88,9	4,0	8,50	8,75
100	4	114,3	4,5	12,4	12,7
125	5	139,7	5,0	16,9	17,4
150	6	165,1[2]	5,0	20,0	20,7

1) See table 2 and sub-clause 8.1.

2) This diameter is not listed in ISO 4200 but the mass per unit length for this tube has been calculated according to the rules laid down in clause 3.

Table 2 — Tolerances on the outside diameter

Dimensions in millimetres

DN	Designation of thread	Outside diameter	
		max.	min.
6	1/8	10,6	9,8
8	1/4	14,0	13,2
10	3/8	17,5	16,7
15	1/2	21,8	21,0
20	3/4	27,3	26,5
25	1	34,2	33,3
32	1 1/4	42,9	42,0
40	1 1/2	48,8	47,9
50	2	60,8	59,7
65	2 1/2	76,6	75,3
80	3	89,5	88,0
100	4	115,0	113,1
125	5	140,8	138,5
150	6	166,5	163,9