



BS 6362 : 1990
ISO 7598 : 1988

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British Standard Specification for

**Stainless steel tubes suitable for screwing
in accordance with BS 21 'Pipe threads for
tubes and fittings where pressure-tight joints
are made on the threads'**

Tubes en acier inoxydable filetables selon BS 21 "Filetages de tuyauterie pour raccordement avec étanchéité dans le filet"

Rohre aus nichtrostendem Stahl für Gewindeverbindungen nach BS 21

British Standards Institution

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National foreword

This British Standard has been prepared under the direction of the Piping Systems Components Standards Policy Committee and is identical with ISO 7598 : 1988 'Stainless steel tubes suitable for screwing in accordance with ISO 7/1', prepared by Technical Committee ISO/TC 5, ferrous metal pipes and metallic fittings, of the International Organization for Standardization (ISO). It supersedes BS 6362 : 1984 which is withdrawn.

Cross-references

International standard	Corresponding British Standard
ISO 7-1 : 1982	BS 21 : 1985 Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions) (Technically equivalent)
ISO 65 : 1981	BS 1387 : 1985 Specification for screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or for screwing to BS 21 pipe threads (Technically equivalent)
ISO 4200 : 1982	BS 3600 : 1988 Specification for dimensions and masses per unit length of welded and seamless steel pipes and tubes for pressure purposes (Technically equivalent)

The Technical Committee has reviewed the provisions of ISO 404 : 1981, ISO 1127 : 1980, ISO 2604-2 : 1975, ISO 2604-5 : 1978, ISO 4144 : 1979, ISO 6708 : 1980 and ISO 9302* to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

ISO 2604-2 is related to the following British Standards

- BS 3059 Specification for steel boiler and superheater tubes
- Part 1 : 1987 Specification for low tensile carbon steel tubes without specified elevated temperature properties
- Part 2 : 1978 Carbon, alloy and austenitic stainless steel tubes with specified elevated temperature properties
- BS 3601 : 1987 Specification for carbon steel pipes and tubes with specified room temperature properties for pressure purposes
- BS 3602 Specification for steel pipes and tubes for pressure purposes: carbon and carbon manganese steel with specified elevated temperature properties
- Part 1 : 1987 Specification for seamless and electric resistance welded including induction welded tubes
- BS 3604 : 1978 Specification for steel pipes and tubes for pressure purposes: ferritic alloy steel with specified elevated temperature properties
- BS 3606 : 1978 Specification for steel tubes for heat exchangers

ISO 2604-5 is related to the following British Standard

- BS 3606 : 1978 Specification for steel tubes for heat exchangers

Compliance with a British Standard does not of itself confer immunity from legal obligations.

* In preparation.

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

1 Scope

This International Standard specifies 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 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7-1 : 1982, *Pipe threads where pressure-tight joints are made on the threads — Part 1 : Designation, dimensions and tolerances*.

ISO 404 : 1981, *Steel and steel products — General technical delivery requirements*.

ISO 2604-2 : 1975, *Steel products for pressure purposes — Quality requirements — Part 2 : Wrought seamless tubes*.

ISO 2604-5 : 1978, *Steel products for pressure purposes — Quality requirements — Part 5 : Longitudinally welded austenitic stainless steel tubes*.

ISO 4144 : 1979, *Stainless steel fittings threaded to ISO 7-1*.

ISO 9302 : —¹⁾, *Seamless and welded (except submerged arc welded) steel tubes for pressure purposes — Electromagnetic testing for verification of hydraulic leak-tightness*.

1) To be published.

3 Calculation of masses

The values for masses per 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 tube of length 7 m with a socket.

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 °C to 1 100 °C and rapidly cooling.

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 internal and external 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.

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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 shall be reasonably straight.

7 Dimensions

7.1 Main data

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

Table 1 — Dimensions and masses per unit length

DN	Designation of thread	Outside diameter ¹⁾ <i>D</i>	Thickness <i>T</i>	Mass per unit length	
				Plain end	Threaded socketed
		mm	mm	kg/m	kg/m
6	1/8	10,2	2	0,41	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	1,6
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	8,5	8,75
100	4	114,3	4,5	12,4	12,7
125	5	139,7	5	16,9	17,4
150	6	165,1 ²⁾	5	20	20,7

1) See table 2 and 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.

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 m and 7 m.

8 Tolerances

8.1 On outside diameter

Tolerances on outside diameter are given in table 2.

Table 2 — Tolerances on outside diameter

Dimensions in millimetres

DN	Designation of thread	Outside diameter	
		max.	min.
6	1/8	10,6	9,8
8	1/4	14	13,2
10	3/8	17,5	16,7
15	1/2	21,8	21
20	3/4	27,3	26,5
25	1	34,2	33,3
32	1 1/4	42,9	42
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
100	4	115	113,1
125	5	140,8	138,5
150	6	166,5	163,9

8.2 On thickness

+ not limited

– 12,5 %

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

8.3 On mass per unit length

± 10 % for each tube

± 7,5 % per lot 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 given in ISO 2604-2 and ISO 2604-5.

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

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

9.4.1 Each tube shall be subjected to a hydraulic test at a pressure of 50 bar¹⁾.

9.4.2 This hydraulic test may, at the option of the manufacturer, be replaced by a non-destructive test carried out in accordance with ISO 9302.

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

10 Designation

A tube in accordance with this International Standard shall be designated by

- a) "Tube";
- b) reference to this International Standard;
- c) its grade of steel;
- d) its nominal size;
- e) its type of end (plain or threaded socketed).

EXAMPLE

A tube of grade TS 46, of nominal size DN 20, and having a threaded end fitted with a screwed socket is designated as follows :

Tube ISO 7598 - TS 46 - DN 20 - threaded 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 ISO 404 : 1981, 5.2.1.

1) 1 bar = 10⁵ Pa

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Annex A (informative)

Bibliography

ISO 65 : 1981, *Carbon steel tubes suitable for screwing in accordance with ISO 7-1.*

ISO 1127 : 1980, *Stainless steel tubes — Dimensions, tolerances and conventional masses per unit length.*

ISO 4200 : 1985, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length.*

ISO 6708 : 1980, *Pipe components — Definition of nominal size.*

Publications referred to

See national foreword.

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Piping Systems Components Standards Policy Committee (PSE/-) to Technical Committee PSE/8, upon which the following bodies were represented:

Adhesive Tape Manufacturers' Association
British Compressed Air Society
British Gas plc
British Malleable Tube Fittings Association
British Steel Industry
British Valve and Actuator Manufacturers' Association
British Welded Steel Tube Association

Food and Drink Federation
Institution of Civil Engineers
Institution of Gas Engineers
Institution of Water and Environmental Management (IWEM)
Mechanical Handling Engineers' Association
Stainless Steel Fabricators' Association of Great Britain
TI (Group Services) Ltd.
Water Authorities' Association
Water Companies' Association
Water Research Centre
Wrought Fitting Makers' Association

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