

CONFIRMED
NOVEMBER 1990

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

UDC 621.643.2—034.14

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
Documents

AVA

Document Sharing Hub

Committees responsible for this British Standard

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

- Adhesive Tape Manufacturers' Association
- British Compressed Air Society
- British Gas Corporation
- British Malleable Tube Fittings Association
- British Steel industry
- British Valve Manufacturers' Association Ltd.
- Engineering Equipment and Materials Users' Association
- Food Manufacturers' Federation Incorporated
- Institution of Civil Engineers
- Institution of Gas Engineers
- Institution of Public Health Engineers
- Institution of Water Engineers and Scientists
- Mechanical Handling Engineers Association
- Society of Motor Manufacturers and Traders Limited
- Stainless Steel Fabricators' Association of Great Britain
- Water Authorities Association
- Water Companies Association
- Water Research Centre
- Wrought Fitting Makers' Association

This British Standard, having been prepared under the direction of the Piping Systems Components Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 October 1985

© BSI 12-1998

First published (as BS 789) February 1938
First revision (as War emergency BS 789A) October 1940
Second revision (as BS 1387) July 1947
Third revision November 1957
Fourth revision March 1967
Fifth revision October 1985

The following BSI references relate to the work on this standard:
Committee reference PSE/8
Draft for comment 84/72359 DC

ISBN 0 580 14503 4

Amendments issued since publication

Amd. No.	Date of issue	Comments
5830	May 1989	Indicated by a sideline in the margin

Contents

	Page
Committees responsible	Inside back cover
Foreword	iii
Section 1. General	
1.1 Scope	1
1.2 Definitions	1
1.3 Designations	1
1.4 Information to be supplied by the purchaser in the enquiry or order	1
Section 2. Tubes and sockets	
2.1 Manufacture	2
2.2 Mechanical properties	2
2.3 Appearance and soundness	2
2.4 Joints	2
2.5 Dimensions and tolerances	2
Section 3. Testing	
3.1 Visual inspection	4
3.2 Tensile test	4
3.3 Bend test (whole tube)	4
3.4 Flattening test	4
3.5 Leak tightness test	4
3.6 Bore test (hot-dip zinc coated tubes only)	4
3.7 Manufacturer's certificate	4
Section 4. Protection	
4.1 General	5
4.2 Varnish	5
4.3 Hot-dip zinc coating	5
4.4 Threads	5
Section 5. Tubulars	
5.1 General	6
5.2 Sockets	6
5.3 Pieces	6
5.4 Nipples	6
5.5 Longscrews	6
5.6 Bends and springs	6
5.7 Return bends	6
5.8 Protection	6
Section 6. Marking	
6.1 Tubes and tubulars	7
Appendix A Information to be supplied by the purchaser in the enquiry or order	15
Appendix B Eddy current testing of tubes as an alternative to the hydraulic leak tightness test	15
Appendix C Method for testing the zinc coating on hot-dip zinc coated tubes and tubulars (copper sulphate test)	16
Figure 1 — Socket	8
Figure 2 — Piece	9
Figure 3 — Nipples	10
Figure 4 — Single longcrew	11
Figure 5 — Double longcrew	11

	Page
Figure 6 — Bends and springs	13
Figure 7 — Return bend	14
Table 1 — Chemical composition and mechanical properties at room temperature	2
Table 2 — Rod diameters	4
Table 3 — Dimensions of steel tubes: light	7
Table 4 — Dimensions of steel tubes: medium	7
Table 5 — Dimensions of steel tubes: heavy	8
Table 6 — Sockets	8
Table 7 — Pieces	9
Table 8 — Running nipples, close taper nipples and barrel nipples	10
Table 9 — Longscrews	12
Table 10 — Bends and springs	14
Table 11 — Return bends	14
Table 12 — Drill diameters	16
Table 13 — Length immersed and volume of test solution	17
Publications referred to	Inside back cover

Foreword

This revision of this British Standard has been prepared under the direction of the Piping Systems Components Standards Committee and supersedes BS 1387:1967 which is withdrawn.

The range of components covered in this revision is the same as and technically equivalent with those of ISO 50 and ISO 65 published by the International Organization for Standardization (ISO). It should be noted that some of the tolerances given in this standard are more stringent than those given in ISO 65.

The revision has been prepared to bring the standard into line with current practice and to clarify the requirements in a more definitive manner. Leak tightness requirements have been updated with the inclusion of eddy current testing as an alternative to hydraulic leak tightness testing and metric units are used throughout this standard. Thread designations, which were previously expressed in inch units, but which are now dimensionless, are retained for information in this standard because these designations are still generally used throughout industry.

Tubes specified in this standard are intended for general purposes. This standard does not indicate the services for which the tubes are appropriate. Where the use of tubes is controlled by bye-laws or regulations reference should be made to the appropriate code of practice or application standard.

This standard does allow options to the standard product, the preferred option, where applicable, being indicated in the appropriate clause. Particular requirements should be indicated by the purchaser, as stated in appendix A, otherwise the manufacturer will supply the product in accordance with the preferred options.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover 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.

Section 1. General

1.1 Scope

This British Standard specifies requirements 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. This standard is applicable to tubes of nominal size DN 8 to DN 150 in three series of thickness, designated light, medium and heavy.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

1.2 Definitions

For the purposes of this British Standard the following definitions apply.

1.2.1

nominal size (DN)

a numerical designation of size which is common to all components in a piping system other than components designated by outside diameters or thread size. It is a convenient round number for reference purposes and is only loosely related to manufacturing dimensions

NOTE 1 Nominal size is designated by the letters DN followed by a number.

NOTE 2 This definition is identical to ISO 6708.

1.2.2

tube

a long hollow, open-ended object of circular cross section

NOTE The term tube is synonymous with the term pipe.

1.2.3

socket

the screwed coupling utilized in joining the tubes together

NOTE The term socket is synonymous with the term coupler.

1.2.4

tubulars

pieces, nipples, long screws, bends, springs and return bends

NOTE See section five and Table 7 to Table 11.

1.2.5

length of screwed and socketed tube

1.2.5.1

exact length

the length of tube exclusive of the socket

1.2.5.2

length, other than the exact length

the overall length when one socket has been fitted

NOTE See also 2.5.2 d).

1.2.6

standard length

the nominal length of a pipe component which by virtue of custom and practice has become the normal length to which the component is supplied

1.3 Designations

1.3.1 Tubes

Tubes shall be designated by the number of this British Standard, the nominal size (DN) and thickness series as given in Table 3, Table 4 and Table 5 together with the type of end finish (plain or screwed ends), e.g. BS 1387 DN 20 medium series, screwed and socketed tube.

1.3.2 Tubulars

Tubulars shall be designated by the number of this British Standard, the nominal size (DN), thickness series, type of tubular and, where appropriate, their length. In addition, bends and springs shall be designated by their type reference (see Figure 6 and Figure 7), e.g. BS 1387 DN 20 medium series, bend type 1.

1.3.3 Sockets and backnuts

Sockets and backnuts shall be designated by the number of this British Standard and the respective nominal size (DN) of the tube for which they are intended, e.g. BS 1387 DN 20 backnut.

1.4 Information to be supplied by the purchaser in the enquiry or order

This standard allows a number of options. Therefore, to assist the purchaser, a check list of the options together with the other information to be supplied in the enquiry or order is given in appendix A.

Section 2. Tubes and sockets

2.1 Manufacture

2.1.1 Manufacture of the steel

The steel shall be produced by the electric or one of the basic oxygen processes and shall be fully killed, semi-killed or rimmed.

2.1.2 Manufacture of the product

Tubes shall be manufactured by a welded process. Sockets shall be manufactured by a seamless or welded process.

2.1.3 Chemical composition

The chemical composition of the steel shall comply with Table 1.

NOTE 1 Chemical analysis of the finished product is not required.
NOTE 2 This steel is regarded as being weldable. However, care should be taken and welding should be carried out in accordance with the appropriate British Standards.

2.1.4 Heat treatment

Tubes shall be supplied in the annealed or normalized condition, the as-welded condition, the as-welded condition with the weld zone heat treated, or after a hot finishing process.

2.2 Mechanical properties

The mechanical properties at room temperature shall be as given in Table 1.

2.3 Appearance and soundness

2.3.1 Small imperfections which do not intrude on the minimum thickness or which can be dressed out such that the thickness after dressing remains within the tolerance limit shall be deemed not to affect compliance with this standard. Surface imperfections shall not be peened.

2.3.2 Screw threads shall comply with the requirements of BS 21 except as provided for in 2.4.

2.3.3 The ends shall be cut cleanly and nominally square with the axis of the tube and be free from excessive burrs.

2.3.4 The tubes shall be straight to within 1 in 500 as measured at the centre of the length.

2.3.5 The tubes shall not include welds used for joining lengths of strip.

2.4 Joints¹⁾

All screwed tubes and sockets shall be threaded in accordance with BS 21 except as provided below and except that on light tubes the length of useful thread shall be reduced to 80 % of that shown in column 12 of Table 2 of BS 21:1985.

Where light tubes approach the lower limits of outside diameter some “black” threads (perfect at the root and imperfect at the crest) are to be expected beyond the gauge plane, but such “black” threads shall be deemed not to affect the compliance of the tubes with this standard.

Tubes shall be supplied screwed with taper threads and fitted with one screwed socket having a parallel thread unless it is specifically requested by the purchaser in his enquiry or order (see appendix A) that the tubes shall be supplied without sockets or supplied with a socket having a taper thread.

2.5 Dimensions and tolerances

2.5.1 Dimensions

The dimensions of tubes shall be as given in Table 3, Table 4 and Table 5.

Dimensions of sockets shall be as given in Table 6.

NOTE A socket is shown in Figure 1.

Table 1 — Chemical composition and mechanical properties at room temperature

Chemical composition (ladle)				Mechanical properties at room temperature		
C	Mn	P	S	Tensile strength, R_m	Yield strength, R_e (min.)	Elongation on gauge length $L_0 = 5.65 \sqrt{S_0 A}$ (min.)
max.	max.	max.	max.			
%	%	%	%	N/mm ²	N/mm ²	%
0.20	1.20	0.045	0.045	320 to 460	195	20

¹⁾ Care is necessary when hand screwing “light” tubes.