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British Standard Specification for
**Seamless and welded steel tubes
for automobile, mechanical and
general engineering purposes**

**Part 5. Specific requirements for electric resistance welded
and induction welded steel tubes**

Tubes en acier soudés et sans soudure pour l'automobile, la mécanique et la technique générale
Partie 5. Tubes en acier soudés par résistance et par induction. Caractéristiques particulières

Nahtlose und geschweißte Stahlrohre für den Kraftfahrzeugbau, Maschinenbau
und für allgemeine technische Zwecke

Teil 5. Besondere Anforderungen an widerstandsgeschweißte und induktionsgeschweißte Stahlrohre

Contents

	Page
Foreword	Inside front cover
Cooperating organizations	Back cover
Specification	
1. Scope	1
2. General	1
3. Method of manufacture	1
4. Delivery condition	1
5. Chemical composition	1
6. Mechanical properties	1
7. Dimensions	1
8. Tolerances	1
9. Tests	4

Foreword

This British Standard has been prepared under the direction of the Iron and Steel Standards Committee. It is a combined standard superseding BS 980 : 1950, BS 1775 : 1964 and BS 3014 : 1958 which are withdrawn.

In BS 6323, manufacturing processes have been aligned with current procedures, and processes no longer used, i.e. oxy-acetylene welding and hydraulic lap welding, have been deleted. Terminology relating to the designation of certain manufacturing processes has been updated, i.e. SAW replaces EFW, and CFS replaces CDS.

Additionally, in combining the standards, steel grades have been rationalized and aligned, with delivery conditions now being clearly designated by letter codes.

This standard is published in eight separate Parts as follows:

Part 1. General requirements

Tables

1. Chemical composition and mechanical properties	2
2. Tolerance on outside diameter	3
3. Tolerance on specified cut length	3
4. Distance between platens for flattening test	4
5. Minimum expansion for drift expanding test	4
6. Dimensions: metric size range in common usage for electric resistance welded and induction welded tubes	5
7. Dimensions: imperial size range in common usage for electric resistance welded and induction welded tubes	7

- Part 2. Specific requirements for hot finished welded steel tubes
- Part 3. Specific requirements for hot finished seamless steel tubes
- Part 4. Specific requirements for cold finished seamless steel tubes
- Part 5. Specific requirements for electric resistance welded and induction welded steel tubes
- Part 6. Specific requirements for cold finished electric resistance welded and induction welded steel tubes
- Part 7. Specific requirements for submerged arc welded steel tubes
- Part 8. Specific requirements for longitudinally welded stainless steel tubes

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



Amendment No. 1
published and effective from 30 June 1986
to BS 6323 : Part 5 : 1982

**Specification for seamless and welded steel tubes for
 automobile, mechanical and general engineering
 purposes**

**Part 5. Specific requirements for electric resistance
 welded and induction welded steel tubes**

Revised text

AMD 5141
 June 1986

Clause 1. Scope

In note 1, line 3, delete 'and BS 4848 : Part 2' and substitute ', BS 4848 : Part 2 and BS 6363'.

AMD 5141
 June 1986

Clause 9.1 General

In line 3, after '9.2', insert 'except for rectangular section tubes exempted by 9.2,'.

AMD 5141
 June 1986

Clause 9.2 Flattening test

Delete the existing clause entirely and substitute the following.

'9.2 Flattening test. The distance between the platens, or in the case of flattening by hammer blows the distance between the outside surfaces, shall not be greater than the percentage of the original outside diameter as shown in table 4. For non-circular tubes the percentage of the original outside dimension before flattening shall be used. The weld shall be placed at 90° to the direction of flattening.

This test shall not be a requirement for rectangular section tubes where the ratio of the major to the minor dimensions is greater than 2.'

AMD 5141
 June 1986

Table 7. Dimensions: imperial size range in common usage for electric resistance welded and induction welded tubes

Delete main headings and substitute the following.

Outside	Mass per unit length (in kg/m and lb/ft)
diameter	Thickness

Against outside diameter 28.58 mm, in column 10 for thickness 1.5 mm, delete '0.100' and substitute '1.00'.

AMD 5141
 June 1986

Publications referred to

Delete the references to BS 980, BS 1775 and BS 3014, and the associated footnote. After the entry for BS 6323 : Part 1, insert the following new entry.

'BS 6363 Specification for welded cold formed steel structural hollow sections'.



Amendment No. 2
published and effective from 30 June 1989
to BS 6323 : Part 5 : 1982

**Specification for seamless and welded steel tubes for
automobile, mechanical and general engineering purposes**
**Part 5. Specific requirements for electric resistance
welded and induction welded steel tubes**

Revised text

AMD 6024
June 1989

Title

In the title on the front cover and on page 1, delete 'and induction welded' and substitute '(including induction welded)'.

Delete the translations on the front cover and substitute the following.

Tubes en acier soudés et sans soudure pour l'automobile, la mécanique et la technique générale
Partie 5. Tubes en acier soudés par résistance (y inclus par induction). Caractéristiques particulières

Nahtlose und geschweißte Stahlrohre für den Kraftfahrzeugbau, Maschinenbau und für allgemeine
technische Zwecke
Teil 5. Besondere Anforderungen an widerstandsgeschweißte (einschließlich induktionsgeschweißter)
Stahlrohre

AMD 6024
June 1989

Contents

Delete lines 2 and 3 of the entries for tables 6 and 7 and substitute 'usage for electric resistance welded (including induction welded) tubes' in both cases.

AMD 6024
June 1989

Foreword

In lines 11 and 13 of paragraph 3, delete 'and induction welded' and substitute '(including induction welded)'.

AMD 6024
June 1989

Clause 1. Scope (as amended by Amendment No. 1)

In line 3, delete 'and induction welded' and substitute '(including induction welded)'.

AMD 6024
June 1989

Clause 8.2 Thickness

After item (b) insert the following.

'The minimum thickness in the weld area shall be not less than that permitted in the body of the tube.'

AMD 6024
June 1989

Table 6. Dimensions: metric size range in common usage for electric resistance welded and induction welded tubes
In the title, delete 'and induction welded' and substitute '(including induction welded)'.

AMD 6024
June 1989

Table 7. Dimensions: imperial size range in common usage for electric resistance welded and induction welded tubes (as amended by Amendment No. 1)
In the title, delete 'and induction welded' and substitute '(including induction welded)'.

AMD 6024
June 1989

Back cover
In the paragraph relating to BSI references and at the bottom of the page, delete 'ISE/50' and substitute 'PSE/8 (formerly ISE/50)' and 'PSE/8' respectively.

British Standard Specification for

Seamless and welded steel tubes for automobile, mechanical and general engineering purposes

Part 5. Specific requirements for electric resistance welded and induction welded steel tubes

1. Scope

This Part of BS 6323, which is used in conjunction with Part 1 of the same standard, covers the specific requirements for electric resistance and induction welded steel tubes for use in the automobile, mechanical and general engineering industries. It specifies the chemical composition, mechanical properties, dimensions, dimensional tolerances and technical delivery condition of the tubes.

NOTE 1. For tubes for pressure purposes, attention is drawn to BS 3601 to BS 3605 and for hollow sections for structural purposes to BS 4360 and BS 4848 : Part 2.

NOTE 2. The titles of the publications referred to in this Part of this standard are listed on the inside back cover.

2. General

The tubes shall comply with the general requirements of BS 6323 : Part 1 and the specific requirements of this Part of the same standard, which covers tubes up to and including 508 mm outside diameter and maximum thickness of 12.5 mm and non-circular tubes with a maximum outside dimension of 60 mm and maximum thickness of 2.5 mm.

The tubes shall be of steel grades 1, 2, 3, 4 and 5. The grade required shall be specified on the enquiry and order, together with other details as specified in clause 5 of BS 6323 : Part 1 : 1982, as appropriate.

If specified in the enquiry and order, tubes having an outside diameter up to and including 101.6 mm, and in any delivery condition, shall be subjected to a leak tightness test (see 9.4).

3. Method of manufacture

The tubes shall be manufactured from flat rolled steel strip, longitudinally welded continuously by the passage of an electric current across the abutting edges without the addition of filler metal.

The requirements for removal of weld upset are given 8.2.

4. Delivery condition

4.1 Circular tubes shall be supplied in one of the following delivery conditions. (See table 3 in BS 6323 : Part 1 : 1982.)

- (a) As-welded and sized: KM;
- (b) Annealed: GKM (see 4.2);
- (c) Annealed (including de-scaling): GZF;
- (d) Normalized: NKM (see 4.2);
- (e) Normalized (including de-scaling): NZF.

Non-circular tubes are supplied only in the 'as-welded and sized' condition (KM).

4.2 It is permissible for tubes supplied in the GKM and NKM conditions to be discoloured, but they shall be free from loose scale.

Where tubes in the GKM condition are required bright annealed, this shall be the subject of an agreement between the purchaser and the manufacturer.

5. Chemical composition

The steel shall show on ladle analysis the composition given in table 1 appropriate to the steel grade specified.

6. Mechanical properties

The tensile properties of the tubes, appropriate to their steel grade and delivery condition, determined in accordance with 15.2 of BS 6323 : Part 1 : 1982 shall be as given in table 1.

For non-circular tubes, the elongation values given for $D/a \leq 20$ apply.

For other mechanical properties, see clause 9.

7. Dimensions

The dimensions of tubes shall be designated by the outside dimensions and thickness.

The sizes of circular tube in common usage are given in tables 6 and 7. Other sizes may be available by agreement between the purchaser and the manufacturer, (see 5.1 of BS 6323 : Part 1 : 1982).

8. Tolerances

8.1 **Outside diameter of circular tubes.** The tolerance on the outside diameter of circular tubes shall be as given in columns 1, 2 or 3 of table 2, dependent on delivery condition and D/a ratio as follows:

(a) *column 1*

- (1) tubes in the as-welded condition with D/a ratio $\leq 40:1$;
- (2) tubes in the annealed or normalized condition with D/a ratio $\leq 20:1$;

(b) *column 2*, tubes in the annealed or normalized condition with D/a ratio $> 20:1$ and $\leq 40:1$;

(c) *column 3*, tubes of all delivery conditions with D/a ratio $> 40:1$;

The tolerance on outside diameter includes ovality.

8.2 **Thickness.** The tolerance on thickness, including eccentricity but excluding the weld, shall be:

- (a) for specified thickness less than 3 mm: $\pm 10\%$;
- (b) for specified thickness 3 mm and over: $\pm 8\%$;

Table 1. Chemical composition and mechanical properties (see note)

Designation	Chemical composition (ladle analysis)						Mechanical properties									
							KM _{±0.8} (as welded)			GKM and GZF (annealed)			NKM and NZF (normalized)			
										R _e min.	R _m min.	A min.		R _e min.	R _m min.	A min.
							D/a ≤ 20	D/a > 20								
ERW 1 *	%	%	%	%	%	%	N/mm ²	N/mm ²	%	%	N/mm ²	N/mm ²	%	N/mm ²	N/mm ²	%
ERW 2 *	0.13	—	0.60	0.050	0.050	0.050	200	300	10	20	150	270	27	155	280	25
ERW 3 *	0.16	—	0.70	0.050	0.050	0.050	250	340	8	15	160	300	27	195	320	25
ERW 4 †	0.20	0.35	0.90	0.050	0.050	0.050	300	400	7	12	170	340	26	215	360	24
ERW 5 †	0.25	0.35	1.20	0.050	0.050	0.050	350	450	6	10	200	400	24	235	410	22
	0.23	0.50	1.50	0.050	0.050	0.050	420	500	6	8	—	—	—	340	490	20

* If rimming or semi-killed steel is used for grade 1 or 2, the carbon content may be increased to 0.19 %, and if used for grade 3, to 0.23 %.

† Grain refining elements may be added to this grade at the option of the manufacturer.

‡ If tubes in the KM condition are subsequently welded, brazed or heated, the mechanical properties in the heat affected zones may be reduced to those given for the delivery condition GKM or NKM.

§ For sizes larger than 274 mm outside diameter, the properties in the KM condition shall be those given for the NKM condition.

NOTE. Welding of these tubes does not require special techniques but care should be taken and welding carried out in accordance with the guidance given in the appropriate British Standard for welding, e.g. BS 5135.

Table 2. Tolerances on outside diameter

Outside diameter		Tolerance*		
		1	2	3
Over	Up to and including	KM condition $D/a \leq 40$ GKM, GZF, NKM, NZF condition $D/a \leq 20$	GKM, GZF, NKM, NZF condition $20 < D/a \leq 40$	All conditions $D/a > 40$
mm	mm	mm	mm	mm
	20	± 0.12	± 0.18	± 0.24
20	30	± 0.15	± 0.22	± 0.30
30	50	± 0.20	± 0.30	± 0.40
50	70	± 0.25	± 0.37	± 0.50
70	90	± 0.30	± 0.45	± 0.60
90	110	± 0.35	± 0.52	± 0.70
110	130	± 0.45	± 0.68	± 0.90
130	150	± 0.55	± 0.82	± 1.10
150	170	± 0.65	± 0.97	± 1.30
170		± 0.75 % of outside diameter	± 1 % of outside diameter	± 1.5 % of outside diameter

*Due to the release of internal stress when an as-welded tube is cut, a change in dimensions is usual. Hence this tolerance does not include ovality within 100 mm of the tube end which is in the as-welded (KM) condition and which has a diameter to thickness ratio greater than 20:1.

The mean diameter $\left(\frac{\text{maximum} + \text{minimum diameter}}{2} \right)$ shall be within these tolerances.

The external weld upset shall be removed completely, i.e. flush with the outside surface of the tube.

The maximum height of the weld bead on the internal surface of the tube shall be not greater than 60 % of the specified thickness.

If specified on the order, the internal weld upset shall be reduced, so that the residual height shall not exceed 0.25 mm.

8.3 Length. Tubes shall be supplied in one of the following ways:

- (a) random lengths of 4 m to 7 m; or
- (b) mill lengths between 3 m and 12 m and subject to a tolerance of $\begin{smallmatrix} +100 \\ -0 \end{smallmatrix}$ mm; or
- (c) specified cut lengths to the tolerances given in table 3.

8.4 Dimensions of non-circular tubes. The tolerance on the outside cross-sectional dimension of non-circular tubes shall be as given in column 1 of table 2. For square or rectangular section tubes, this dimension shall be measured across opposite faces at a position no more than 5 mm from the corner and at a distance not less than 50 mm from the cut end.

The maximum concave or convex deflection of a flat side of a square or rectangular section tube shall not exceed 0.5 % of the nominal length of that side.

Table 3. Tolerance on specified cut length

Specified cut length		Tolerance
Over	Up to and including	
mm	mm	mm
	500	+2 -0
500	2000	+3 -0
2000	5000	+5 -0
5000	7000	+10 -0
7000	—	by agreement

NOTE. Closer tolerances may be obtained by agreement between the purchaser and the manufacturer.

9. Tests

9.1 General. In addition to the tensile test specified in clause 6, tubes shall be subjected to a flattening test as given in 9.2 and a drift expanding test as given in 9.3. The tests shall be carried out in accordance with 15.3 and 15.6, respectively, of BS 6323 : Part 1 : 1982.

9.2 Flattening test. The distance between the platens, or in the case of flattening by hammer blows the distance between the outside surface, shall be not greater than the percentage of the original outside diameter as shown in table 3. The weld shall be placed at 90° to the direction of flattening.

9.3 Drift expanding test. This test applies only to circular tubes in thicknesses of 1 mm to 8 mm and diameters up to and including 120 mm.

NOTE. The internal weld upset may be removed before testing.

The percentage increase in outside diameter shall be not less than the value given in table 5.

9.4 Leak tightness test. When a leak tightness test is required by the purchaser and specified on his enquiry and order, each tube shall be tested by one of the following methods:

- (a) hydraulic leak tightness test (see 15.7 of BS 6323 : Part 1 : 1982).
- (b) eddy current test (see 15.8 of BS 6323 : Part 1 : 1982).
- (c) any other method giving an equivalent assurance of leak tightness as agreed between the manufacturer and the purchaser.

Selection of the test method shall be at the option of the manufacturer, unless a specific test is required by the purchaser, and specified on his enquiry and order.

Table 4. Distance between platens for flattening test

Designation	Distance between platens or outside surfaces
	%
ERW 1	66
ERW 2	75
ERW 3	85
ERW 4	85
ERW 5	85

Table 5. Minimum expansion for drift expanding test

Designation	Expansion minimum for tube thickness	
	1 mm up to and including 4 mm	Over 4 mm up to and including 8 mm
	%	%
ERW 1	12	8
ERW 2	12	8
ERW 3	10	6
ERW 4	8	5
ERW 5	8	5

Table 6. Dimensions: metric size range in common usage for electric resistance welded and induction welded tubes

Outside diameter	Masses per unit length (in kg/m)																			
	Thickness (in mm)																			
Table 3*	0.5	0.8	1.0	1.2	1.5	1.6	1.8	2.0	2.2	2.3	2.5	2.6	2.8	2.9	3.0	3.2	3.5	3.6	4.0	4.5
Table 4*	0.5	0.7	0.9	1.0	1.2	1.5	1.6	1.8	2.0	2.2	2.3	2.5	2.6	2.8	2.9	3.0	3.2	3.5	3.6	4.0
Others	0.5	0.7	0.9	1.0	1.2	1.5	1.6	1.8	2.0	2.2	2.3	2.5	2.6	2.8	2.9	3.0	3.2	3.5	3.6	4.0
5	0.055	0.074	0.083	0.091	0.099															
6	0.068	0.091	0.103	0.113	0.123															
8	0.092	0.126	0.142	0.158	0.173															
10	0.117	0.161	0.202	0.222																
12	0.142	0.195	0.221	0.246	0.271															
13.5			0.251	0.280	0.308	0.364	0.444	0.470	0.519	0.567										
16	0.300	0.335	0.370	0.438	0.536	0.568	0.630	0.691												
17.2	0.324	0.362	0.400	0.474	0.581	0.684	0.750		0.814	0.845										
19.0	0.359	0.402	0.444	0.527	0.647	0.687	0.764	0.838	0.911	0.947	1.02	1.05								
20	0.379	0.424	0.469	0.556	0.684	0.726	0.808	0.888	0.966	1.00	1.08	1.12								
21.3	0.404	0.453	0.501	0.595	0.732	0.777	0.866	0.952	1.04	1.08	1.16	1.20								
22	0.418	0.468	0.518	0.616	0.758	0.805	0.897	0.986	1.07	1.12	1.20	1.24	1.33	1.37	1.41	1.48	1.86	1.90		
25.0	0.477	0.535	0.592	0.704	0.869	0.923	1.03	1.13	1.24	1.29	1.39	1.44	1.53	1.58	1.63	1.72	1.87	2.02	2.07	
26.9	0.515	0.577	0.639	0.761	0.940	0.988	1.11	1.23	1.34	1.40	1.50	1.56	1.66	1.72	1.77	1.87	2.02	2.17	2.24	
28	0.537	0.601	0.666	0.793	0.980	1.04	1.16	1.28	1.40	1.46	1.57	1.63	1.74	1.80	1.85	1.96	2.11	2.17		
30	0.576	0.646	0.715	0.852	1.05	1.12	1.25	1.38	1.51	1.57	1.70	1.76	1.88	1.94	2.00	2.11	2.29	2.34		
31.8	0.612	0.686	0.760	0.906	1.12	1.19	1.33	1.47	1.61	1.67	1.81	1.87	2.00	2.07	2.13	2.26	2.44	2.50		
32	0.690	0.765	0.841	1.000	1.24	1.31	1.45	1.60	1.75	1.81	1.96	2.02	2.17	2.23	2.29	2.44	2.62	2.67		
33.7	0.728	0.806	0.886	1.061	1.33	1.40	1.54	1.69	1.84	1.90	2.05	2.11	2.26	2.32	2.38	2.53	2.71	2.76		
35	0.757	0.838	1.00	1.24	1.54	1.61	1.75	1.90	2.05	2.11	2.26	2.32	2.47	2.53	2.59	2.74	2.92	2.97		
38.0	0.823	0.912	1.09	1.35	1.66	1.73	1.87	2.02	2.17	2.23	2.38	2.44	2.59	2.65	2.71	2.86	3.04	3.09		
40	0.868	0.962	1.15	1.42	1.74	1.81	1.95	2.10	2.25	2.31	2.46	2.52	2.67	2.73	2.79	2.94	3.12	3.17		
42	0.912	1.01	1.21	1.50	1.82	1.89	2.03	2.18	2.33	2.39	2.54	2.60	2.75	2.81	2.87	3.02	3.20	3.25		
44.5	0.968	1.07	1.28	1.59	1.91	1.98	2.12	2.27	2.42	2.48	2.63	2.69	2.84	2.90	2.96	3.11	3.29	3.34		
45	0.979	1.09	1.30	1.61	1.93	1.99	2.13	2.28	2.43	2.49	2.64	2.70	2.85	2.91	2.97	3.12	3.30	3.35		
48.3	1.05	1.16	1.38	1.70	2.02	2.08	2.22	2.37	2.52	2.58	2.73	2.79	2.94	3.00	3.06	3.21	3.39	3.44		
50	1.05	1.17	1.39	1.71	2.03	2.09	2.23	2.38	2.53	2.59	2.74	2.80	2.95	3.01	3.07	3.22	3.40	3.45		
51.0	1.09	1.21	1.44	1.76	2.08	2.14	2.28	2.43	2.58	2.64	2.79	2.85	3.00	3.06	3.12	3.27	3.45	3.50		
54	1.11	1.23	1.47	1.80	2.12	2.18	2.32	2.47	2.62	2.68	2.83	2.89	3.04	3.10	3.16	3.31	3.49	3.54		
55	1.18	1.31	1.56	1.90	2.22	2.28	2.42	2.57	2.72	2.78	2.93	3.00	3.15	3.21	3.27	3.42	3.60	3.65		
57.0	1.20	1.33	1.59	1.98	2.30	2.36	2.50	2.65	2.80	2.86	3.01	3.08	3.23	3.29	3.35	3.50	3.68	3.73		
60	1.25	1.38	1.65	2.05	2.37	2.43	2.57	2.72	2.87	2.93	3.08	3.15	3.30	3.36	3.42	3.57	3.75	3.80		
60.3	1.75	2.18	2.32	2.60	2.88	3.15	3.29	3.56	3.70	3.77	4.04	4.18	4.45	4.59	4.73	5.00	5.14	5.27		
63.5	1.83	2.28	2.42	2.72	3.01	3.30	3.44	3.73	3.87	3.94	4.23	4.37	4.66	4.80	4.94	5.22	5.36	5.49		
70.0	1.84	2.29	2.44	2.74	3.03	3.33	3.47	3.76	3.90	3.97	4.26	4.40	4.69	4.83	4.97	5.25	5.39	5.52		
76	2.04	2.53	2.70	3.03	3.35	3.68	3.84	4.16	4.32	4.40	4.70	4.84	5.13	5.27	5.41	5.69	5.83	5.97		
76.1	2.21	2.76	2.94	3.29	3.65	4.00	4.18	4.53	4.71	4.79	5.08	5.24	5.53	5.67	5.81	6.10	6.24	6.38		
82.5	2.22	2.76	2.94	3.30	3.65	4.01	4.19	4.54	4.71	4.79	5.08	5.24	5.53	5.67	5.81	6.10	6.24	6.38		
88.9	2.41	3.00	3.19	3.58	3.97	4.36	4.55	4.93	5.12	5.20	5.50	5.69	6.00	6.15	6.29	6.59	6.74	6.89		
90	2.60	3.23	3.44	3.87	4.29	4.70	4.91	5.33	5.53	5.63	5.95	6.15	6.46	6.61	6.76	7.07	7.22	7.37		
100	2.63	3.27	3.49	3.92	4.34	4.76	4.97	5.39	5.60	5.71	6.03	6.23	6.54	6.69	6.84	7.15	7.30	7.45		
101.6			3.88	4.36	4.83	5.31	5.63	6.11	6.35	6.52	6.76	6.92	7.16	7.32	7.48	7.72	7.88	8.12		
108.0																				
114.3																				
127.0																				
139.7																				
140																				
152.4																				
159.0																				
168.3																				
193.7																				
219.1																				
273.0																				
323.9																				
355.6																				
406.4																				
457.0																				

*The outside diameters and thicknesses of columns headed 'Table 3' and 'Table 4' have been selected from tables 3 and 4 respectively of ISO 4200-1980, published by the International Organization for Standardization (ISO). Table 3 sizes originated from their use as components in piping systems. Series 1 sizes from table 3 and Series 2 sizes from table 4 are shown in heavy type.

NOTE: Diameters and thicknesses other than those listed are available by agreement between the purchaser and the manufacturer.

D/a > 40 | D/a < 20

5

Publications referred to

BS 980*	Steel tubes for automobile purposes
BS 1775*	Steel tubes for mechanical, structural and general engineering purposes
BS 3014*	'As welded' and cold drawn welded austenitic stainless steel tubes for mechanical, structural and general engineering purposes
BS 3601	Steel pipes and tubes for pressure purposes: carbon steel with specified room temperature properties
BS 3602	Specification for steel pipes and tubes for pressure purposes: carbon and carbon manganese steel with specified elevated temperature properties
BS 3603	Specification for steel pipes and tubes for pressure purposes: carbon and alloy steel with specified low temperature properties
BS 3604	Specification for steel pipes and tubes for pressure purposes: ferritic alloy steel with specified elevated temperature properties
BS 3605	Seamless and welded austenitic stainless steel pipes and tubes for pressure purposes
BS 4360	Specification for weldable structural steels
BS 4848	Hot-rolled structural steel sections Part 2 Hollow sections
BS 5135	Metal-arc welding of carbon and carbon manganese steels
BS 6323	Specification for seamless and welded steel tubes for automobile, mechanical and general engineering purposes Part 1 General requirements
ISO 4200	Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length

*Referred to in the foreword only.

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The following BSI references relate to the work on this standard: Committee reference ISE/50 Draft for comment 78/74961 DC

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- British Ironfounders' Association
- British Railways Board
- *British Steel Industry
- British Steel Industry — Wire Section
- Concrete Society Ltd
- Council of Ironfoundry Associations
- Department of Industry (National Physical Laboratory)
- Electricity Supply Industry in England and Wales
- Engineering Equipment Users' Association
- Federation of Civil Engineering Contractors
- Institute of Quality Assurance
- Institution of Production Engineers
- Institution of Structural Engineers
- International Tin Research Institute
- Lloyds Register of Shipping
- National Association of Drop Forgers and Stampers

- Oil Companies Materials Association
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The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- Association of Hydraulic Equipment Manufacturers
- British Steel Corporation
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- Confederation of British Industry
- Mechanical Handling Engineers' Association
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