

Stainless steel tubes and fittings for the food industry and other hygienic applications —

Part 1: Specification for tubes

ICS 67.260; 77.140.75

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
 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
 Stainless Steel Fabricators' Association of Great Britain
 Steel Tube Fittings Manufacturers' Technical Association
 Water Companies Association
 Water Research Centre
 Water Services Association of England and Wales
 Coopted member

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Brewers Society
 Dairy Trade Federation
 Institution of Production Engineers
 Milking Machine Manufacturers' Association

This British Standard, having been prepared under the direction of the Piping Systems Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

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The following BSI references relate to the work on this standard:
 Committee reference PSE 8
 Drafts for comment
 88 72919 DC,
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Amendments issued since publication

Amd. No.	Date	Comments
14042	21 January 2009	Revision of tolerance level in 5.2
Amendment No. 2	30 September 2009	See foreword

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Foreword

This Part of BS 4825 has been prepared under the direction of the Piping Systems Components Standards Policy Committee.

BS 4825-1:1991+A2:2009 supersedes BS 4825-1:1991, which is withdrawn.

BS 4825 is published in five Parts:

- *Part 1: Specification for tubes;*
- *Part 2: Specification for bends and tees;*
- *Part 3: Specification for clamp type couplings;*
- *Part 4: Specification for threaded (IDF type) couplings;*
- *Part 5: Specification for recessed ring joint type couplings.*

This Part of BS 4825 incorporates the range of sizes greater than 101.6 mm as specified in ISO 2037, published by the International Organization for Standardization. Sizes up to and including 101.6 mm are direct metric equivalents of the range of imperial sizes and wall thicknesses preferred by United Kingdom industry.

The essential differences between this Part of BS 4825 and BS 4825-1:1972 are as follows.

- a) A greater selection of materials is given.
- b) Sizes up to and including 101.6 mm outside diameter are exact metric equivalents of imperial sizes of tube.
- c) Alternative thicknesses of tube of 1.6 mm and 1.2 mm have been included in the range from 25.4 mm to 50.8 mm outside diameter.
- d) The tolerance band for exact lengths has been reduced.
- e) Marking requirements are given in greater detail.

The start and finish of text introduced or altered by Amendment No. 2 is indicated in the text by tags **A2** and **A2**. Amendment No. 1 is not indicated. Minor editorial changes are not tagged.

Amendment No. 2 updates British steel grades to European steel numbers, and brings up-to-date testing requirements into this standard.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11, and a back cover.

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1 Scope

This Part of BS 4825 specifies requirements for stainless steel tubes in straight lengths for the food industry and other industries where hygienic requirements are necessary. This standard covers seamless and longitudinally welded austenitic stainless steel tube from 12.7 mm to 406.4 mm outside diameter, and specifies dimensions, tolerances, surface finish and materials.

The standard does not cover ERW tube.

NOTE 1 The suitability of a tube for a hygienic application is determined mainly by its material, finish and the condition of the longitudinal weld (see Clause 7).

NOTE 2 The titles of the publications referred to in this standard are listed on [A2](#) page 10 [A2](#).

2 Information to be supplied by the purchaser

2.1 The purchaser is to provide to the supplier the information given in Appendix A to enable products to be supplied in accordance with this standard.

2.2 A number of options are permitted by this standard as given in Appendix B.

Both the definitive requirements specified throughout this standard and the options selected by the purchaser shall be satisfied by the manufacturer before a claim of compliance with this standard can be made and verified. In the event that the purchaser does not indicate his requirements at the time of enquiry and order the manufacturer shall select the option where appropriate.

3 Materials and manufacture

3.1 [A2](#) The European stainless steel number shall be selected from the list given in Table 1. [A2](#)

NOTE The [A2](#) European steel number [A2](#) should be specified by the purchaser in his enquiry and/or order (see Appendix A).

[A2](#) The cast analysis shall conform to the composition specified in BS EN 10088-2 or BS 10088-3, as applicable. [A2](#)

[A2](#) Table 1 — Materials

European steel number ^a	Former BS designation ^b	
	Welded ^c	Seamless ^c
1.4307	304S22	—
1.4306	—	304S11
1.4301	304S25	304S31
1.4404	316S22	316S11
1.4435	—	316S13
1.4401	316S26	316S31
1.4436	—	316S33

^a For the chemical composition refer to BS EN 10088-2 (for welded tubes) or BS EN 10088-3 (for seamless tubes).

^b The European chemical compositions are not necessarily identical to the former BS designations.

^c The terms “welded” and “seamless” refer to the method of tube manufacture. [A2](#)

3.2 Tubes shall be made by either the cold finished seamless, or welded and bead rolled process.

NOTE Electric resistance welding is not considered suitable for stainless steel tube for the food industry and electric resistance welded tubes are excluded from this standard (see 3.4).

3.3 All tubes shall be fully annealed and free from scale (see note 4 to Table 3).

3.4 Welded tubes shall be manufactured from flat rolled strip, longitudinally welded across the abutting edges by a continuous automatic welding process, with or without the addition of filler metal. If filler wire is used, it shall [A2](#) conform to BS EN ISO 14343 [A2](#).

3.5 For welded tubes, welds joining lengths of strip shall be cut out of the finished tube.