

Please be aware that this PDF has been created from the original hardcopy document, which might not be in good condition and so the PDF might reflect this.

LIBRARY

OFFICE AND

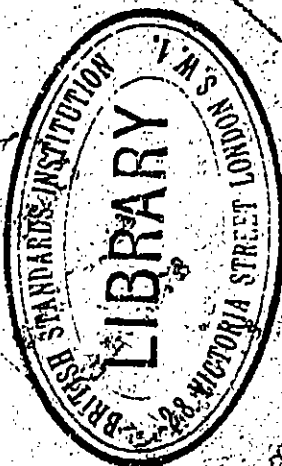
BRITISH STANDARD 1387 : 1947

Sup. by 1957 issue

STEEL TUBES AND TUBULARS

SUITABLE FOR SCREWING

TO B.S. 21 PIPE THREADS



Price 2/6 net, post free

BRITISH STANDARDS INSTITUTION

Incorporated by Royal Charter

28 VICTORIA STREET, LONDON, S.W.1

Telegrams: Standards, Sowest, London

Telephone: Abbey 3333

THIS BRITISH STANDARD, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the chairman of the Engineering Divisional Council, was published by the authority of the General Council on 11th July 1947

First published (as B.S. 789), February, 1938.

First revision (as war emergency B.S. 789A), October, 1940.
Second revision July 1947.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over one thousand, indexed and cross-indexed for reference, together with an abstract of each standard will be found in the Institution's Yearbook, price 2s. 0d. post free.

This British Standard requires reference to the following :

B.S. 21 Pipe threads.

B.S. 427 Diamond pyramid hardness numbers

B.S. 729 Testing of the zinc coating on galvanized articles.

British Standards are revised, when necessary, either by the issue of amendment slips or revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or edition.

Users wishing to be kept informed of any alteration to this standard should notify Publications Sales Department of the Institution, giving the number and title of the standard.

MEE/45

2

CONTENTS

Co-operating organizations	Page
Foreword	4
	3

SPECIFICATION

PART 1. GENERAL	6
1. Scope	6
2. Definitions	6
3. Information required with order	6

PART 2. TUBES AND SOCKETS

4. Process of manufacture	6
5. Quality of material	7
6. Dimensions of tubes and sockets	7
7. Joints	7
8. Lengths	7
9. Galvanizing	8
10. Tolerances	8
11. Hydraulic test	9
12. Tests on finished tubes and sockets	9
13. Workmanship	10
14. Marking for indication of class	10
15. Packing for transport	11

PART 3. TUBULARS

16. General	11
17. Joints	11
18. Galvanizing	11
19. Marking	11
20. Pieces	11
21. Longscrews (connectors)	11
22. Bends and springs	12
23. Return bends	12
24. Barrel nipples	12

TABLES

1. Dimensions of steel tubes and sockets	13
2. Weights of steel tubes	14
3. Pieces	15
4. Longscrews	17
5. Bends and springs	19
6. Return bends	20
7. Barrel nipples	21

APPENDIX

Mechanical expansion test	22
---------------------------	----

3

CO-OPERATING ORGANIZATIONS

The Mechanical Industry Committee under whose supervision this British Standard was prepared consists of representatives from the following Government departments and scientific and industrial organizations:

- *Admiralty
- *Crown Agents for the Colonies
- *Department of Scientific and Industrial Research
- *High Commissioner for India
- *Home Office
- *Ministry of Transport
- *Ministry of Works
- *War Office
- *Agricultural and Road Machinery Manufacturers' Association
- *Association of Consulting Engineers
- *British Chemical Plant Manufacturers' Association
- *British Electrical and Allied Manufacturers' Association
- *British Engineers' Association
- *British Iron and Steel Federation
- *British Marine Oil Engine Manufacturers' Association
- *Engineering Insurance Companies
- *Institute of Marine Engineers
- *Institute of Petroleum
- *Institution of Automobile Engineers
- *Institution of Civil Engineers
- *Institution of Gas Engineers
- *Institution of Heating and Ventilating Engineers
- *Institution of Mechanical Engineers
- *Institution of Production Engineers
- *Locomotive Manufacturers' Association
- *Machine Tool Trades Association
- *Railway Companies of Great Britain

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- British Corporation Register of Shipping and Aircraft
- Gas List Tube and Fittings Association
- Institute of Naval Architects
- Institute of Plumbers
- Institute of Refrigeration
- Institution of Chemical Engineers
- Institution of Municipal and County Engineers
- Institution of Sanitary Engineers
- Institution of Water Engineers
- London County Council
- Lloyds Register of Shipping and Aircraft
- Metropolitan Water Board
- National Association of Coke and Bye-Product Plant Owners
- National Association of Heating, Ventilating and Domestic Engineering Employers
- Royal Sanitary Institute
- Society of Chemical Industries
- Wrought Fitting Makers' Association
- Manufacturers of Steel Tubes

BRITISH STANDARD SPECIFICATION FOR STEEL TUBES AND TUBULARS

SUITABLE FOR SCREWING TO B.S. 21, PIPE THREADS

FOREWORD

The British Standard for steel tubes and tubulars was first issued in 1938 as B.S. 789.

This standard provided for three classes of tubes designated gas (light), water (medium) and steam (heavy) qualities.

In 1940, at the request of the Ministry of Supply and to meet the urgent need for the utmost economy in the consumption of steel, a war emergency edition of B.S. 789 was issued, designated B.S. 789A, providing for two qualities of tube known respectively as 'light weight' (one gauge lighter than gas weight in B.S. 789 : 1938) and 'heavy weight' (the same gauge as water weight in B.S. 789 : 1938).

The present standard has been prepared to meet the needs of post-war industry, and replaces B.S. 789 and B.S. 789A. It differs from B.S. 789 and B.S. 789A in certain respects, the principal ones being as follows:

It covers three thicknesses of tube, namely:

Class 'A' A new light-weight tube.

Class 'B' A tube of the same thickness as the gas (light) tube of B.S. 789 : 1938.

Class 'C' A tube of the same thickness as the steam (heavy) tube of B.S. 789 : 1938.

In order to prevent confusion in nomenclature with tubes made to B.S. 789 and B.S. 789A, reference to 'light' or 'heavy' weight or quality, or 'gas' or 'steam' quality tubes should be avoided, and the tubes should be described by the number of the present standard and by the class of tube.

Further, to prevent confusion with tubes made to B.S. 789 and 789A, new identification colours have been adopted, which are set out in clause 14 of the standard.

The weights given in table 2 are based on the mean of the maximum and minimum outside diameters of the tubes. These weights differ slightly from those given in B.S. 789, since the weights in that specification were based on the approximate outside diameters.

The random lengths now specified differ from those given in B.S. 789 and 789A, due to improved manufacturing processes.

See Amend. No. 2.

NOTE. This British Standard does not indicate the services for which the three classes of tube are appropriate. Where the use of the tubes is not controlled by by-laws or regulations, reference should be made to the code of practice relating to the particular application.

SPECIFICATION

PART ONE: GENERAL

SCOPE

1. This British Standard applies to welded and seamless, screwed and socketed steel tubes and tubulars, and to plain end steel tubes suitable for screwing to B.S. 21, 'Pipe threads,' of nominal bores from $\frac{1}{8}$ in. to 6 in. inclusive. Three thicknesses of tube are provided for, and are designated Class A, Class B and Class C, in accordance with the tables.

NOTE. Attention is drawn to the Foreword, which gives the relationship between these classes of tubes and those which were standardized in previous editions of this standard.

DEFINITIONS

2. For the purposes of this British Standard the following definitions have been adopted:—

a. Tube. The term 'tube' denotes a straight tube of uniform bore.

NOTE. The term 'tube' is synonymous with the term 'pipe.'

b. Socket. The term 'socket' denotes the screwed coupling utilized in jointing the tubes together.

NOTE. The term 'socket' is synonymous with the term 'coupler.'

c. Tubular. The term 'tubular' covers pieces, long screws, bends, springs, return bends and barrel nipples, as described in Part Three and tables 3 to 7.

d. Length. The length of a screwed and socketed 'random length' tube is the overall length when one socket has been screwed on.

The length of a screwed and socketed 'exact length' tube is the length of the tube exclusive of the socket.

e. Nominal bore. The term 'nominal bore' denotes the nominal internal diameter of the tube.

INFORMATION REQUIRED WITH ENQUIRY AND ORDER

3. When the purchaser desires to witness the mechanical or other tests, or to receive certificates that the tubes or tubulars conform in all respects to the appropriate requirements of this standard, he shall state this in his enquiry and order.

PART TWO: TUBES AND SOCKETS

PROCESS OF MANUFACTURE

4. Class A tubes shall be welded. Class B and Class C tubes and all sockets may be either welded or seamless.

QUALITY OF MATERIAL

5. The tubes shall be manufactured from steel which shall show on analysis not more than 0.060 per cent of sulphur nor more than 0.060 per cent of phosphorus.

Lengths or strips cut from selected tubes shall show an ultimate tensile strength of from 22 to 30 tons per square inch and an elongation of not less than 18 per cent measured on a gauge length of 8 in.

The sockets shall be manufactured either from steel similar to that of the tubes, or from wrought iron. Where wrought iron is used, it shall contain not more than 0.150 per cent of manganese nor more than 0.030 per cent of sulphur. If seamless sockets are supplied all effects of cold working shall be removed.

DIMENSIONS OF TUBES AND SOCKETS

6. The dimensions of the tubes and sockets shall be in accordance with table 1, subject to the tolerances permitted in clause 10.

NOTES. (i) *Thickness.* All thicknesses are Standard Wire Gauge.*

(ii) *Nominal bore.* The outside diameter of each size of tube is controlled by the dimensions of the screw threads which are utilized in jointing the tubes. Therefore, the actual bore of each size of tube will vary according to the thickness. For convenience it is advantageous to designate tubes by their nominal bore.

(iii) *Sockets.* Sockets shall be designated by the respective nominal bores of the tubes for which they are intended.

JOINTS

7. ~~As screwed~~ tubes and sockets shall have British Standard pipe threads, in accordance with the requirements of B.S. 21, 'Pipe threads,' except as provided in the Note to clause 10 of this standard, and except that on Class A tubes which are screwed by the manufacturer the minimum length of thread may, to reduce risk of damage in transit, be reduced to 80 per cent of that shown in col. 7 of table 3 of B.S. 21. Unless otherwise specified, tubes shall be supplied screwed with taper threads, and sockets with parallel threads. Each tube shall be supplied with one socket. The ends of sockets shall be bevelled sufficiently to prevent damage to the leading thread.

LENGTHS

8. *a. Random lengths.* Tubes of $\frac{1}{8}$ in. nominal bore shall be supplied in random lengths of from 10 to 17 ft. Tubes $\frac{1}{4}$ in. to 6 in. nominal bore inclusive shall be supplied in random lengths of from 15 to 23 ft.

For orders of over 500 ft. of any one size of tube from $\frac{1}{4}$ in. to 6 in. nominal bore, it shall be permissible to supply short random lengths of from 12 to 15 ft., provided that the number of such lengths does not exceed $7\frac{1}{2}$ per cent of the total number of lengths for sizes $2\frac{1}{2}$ in. to 4 in.

* Standard Wire Gauge, legalized by Order in Council dated August 23rd, 1883.