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SPECIFICATION FOR STEEL PIPES, FITTINGS AND SPECIALS FOR WATER, GAS AND SEWAGE

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SPECIFICATION FOR

STEEL PIPES, FITTINGS AND SPECIALS FOR WATER, GAS AND SEWAGE

B.S. 534 : 1966

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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 under the authority of the General Council on 16th December, 1966.

First published 1934.
First revision, December, 1966.

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 4000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, price 15s. The B.S. Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

B.S. 10. Flanges and bolting for pipes, valves and fittings.
B.S. 12. Portland cement (ordinary and rapid-hardening).
B.S. 21. Pipe threads.
B.S. 242, 243, 259. Linseed oil for paints. 259. Boiled linseed oil.
B.S. 350. Conversion factors and tables.
B.S. 882, 1201. Aggregates from natural sources for concrete (including granolithic). 882. Coarse and fine aggregate from natural sources.
B.S. 1387. Steel tubes and tubulars suitable for screwing to B.S. 21 pipe threads.
B.S. 1560. Steel pipe flanges and flanged fittings (nominal sizes ½ in to 24 in) for the petroleum industry.
B.S. 1821. Class I oxy-acetylene welding of steel pipelines and pipe assemblies for carrying fluids.

B.S. 2521–24. Ready mixed oil-based priming paints. 2523. Lead-based priming paints for iron and steel (Types A, B and C).
B.S. 2633. Class I arc welding of ferritic steel pipework for carrying fluids.
B.S. 2640. Class II oxy-acetylene welding of steel pipelines and pipe assemblies for carrying fluids.
B.S. 2856. Precise conversion of inch and metric sizes on engineering drawings.
B.S. 2971. Class II metal-arc welding of steel pipelines and pipe assemblies for carrying fluids.
B.S. 3396. Woven glass fibre fabrics for plastics reinforcement.
B.S. 3601. Steel pipes and tubes for pressure purposes. Carbon steel: ordinary duties.
CP 2010. Pipelines.
B.S. .....*. Hot applied bitumen based coatings for ferrous products.
B.S. .....*. Coal tar based hot applied coating materials for protecting iron and steel.

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

* In course of preparation.

The following B.S.I. references relate to the work on this standard:
Committee reference MEE/168 Draft for comment D65/11093

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CO-OPERATING ORGANIZATIONS

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

Associated Offices' Technical Committee
*Association of Consulting Engineers
Association of Mining Electrical and Mechanical Engineers
Board of Trade
British Chemical Plant Manufacturers' Association
British Compressed Air Society
British Electrical and Allied Manufacturers' Association
British Gear Manufacturers' Association
British Internal Combustion Engine Manufacturers' Association
*British Iron and Steel Federation
British Mechanical Engineering Federation
British Railways Board
*Crown Agents for Oversea Governments and Administrations
Electricity Council, the Generating Board and the Area Boards in England and Wales
Engineering Equipment Users' Association
Gas Council
Institute of Marine Engineers
*Institution of Civil Engineers
*Institution of Gas Engineers
Institution of Heating and Ventilating Engineers
Institution of Mechanical Engineers
Institution of Mechanical Engineers (Automobile Division)
Institution of Production Engineers
Locomotive and Allied Manufacturers' Association of Great Britain
London Transport Board
Machine Tool Trades Association
Ministry of Defence, Army Department
Ministry of Defence, Navy Department
Ministry of Labour (H.M. Factory Inspectorate)
Ministry of Power
*Ministry of Public Building and Works
Ministry of Technology—National Engineering Laboratory
Ministry of Transport
National Coal Board
National Physical Laboratory (Ministry of Technology)
Radio Industry Council
Royal Institute of British Architects

The Government department 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 Waterworks Association
Federation of Civil Engineering Contractors
Institution of Municipal Engineers
Institution of Water Engineers
Ministry of Housing and Local Government
Royal Society for the Promotion of Health
Rugby Joint Water Board
Manufacturers of pipes and fittings

BRITISH STANDARD SPECIFICATION FOR

STEEL PIPES, FITTINGS AND SPECIALS FOR WATER, GAS AND SEWAGE

FOREWORD

This revision of this British Standard has been prepared under the authority of the Mechanical Engineering Industry Standards Committee. It takes account of the publication of B.S. 3601, 'Steel pipes and tubes for pressure purposes: carbon steel, ordinary duties', and calls for pipes made to that specification.

The committee has taken account of current jointing devices and external and internal protections and this standard has been brought up to date in this regard. Reference is also made to the specifications for hot applied bitumen based coatings for ferrous products and for coal tar based hot applied coating materials for protecting iron and steel, which are in course of preparation.

See Amendment No. 1.

NOTE. Where metric values are given without brackets, they have been taken from ISO Recommendation R 336* or R 65†. Where metric values are given in brackets they are approximate conversions of the basic inch pound value. For exact conversions B.S. 350‡ should be consulted. Attention is also drawn to B.S. 2856§

SPECIFICATION

1. GENERAL

1.1 Scope

1.1.1 This standard applies to seamless and welded carbon steel pipes, fittings and specials and to joints in respect of the pipe end preparation in sizes 2⅜ in, 60·3 mm, to 73¼ in (1861 mm) outside diameter for the conveyance of water, gas and sewage. It includes mill applied coatings and external and internal protections against the corrosive action of the surrounding medium or conveyed fluid.

This standard does not apply to steel tubes and tubulars with screwed and socketed joints, which are covered by the requirements of B.S. 1387‖.

* ISO R 336, Plain end steel tubes, welded or seamless. General table of dimensions and masses per unit length.
† ISO R 65. Steel tubes suitable for screwing in accordance with ISO Recommendation R 7.
‡ B.S. 350, 'Conversion factors and tables'.
§ B.S. 2856, 'Precise conversions of inch and metric sizes on engineering drawings'.
‖ B.S. 1387, 'Steel tubes and tubulars suitable for screwing to B.S. 21 pipe threads'.

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1.2 Design and application

1.2.1 For recommendations in regard to the basis of design and service limitations, reference should be made to Code of Practice CP 2010*, Part 2, Design.

1.3 Definitions

1.3.1 For the purposes of this standard the following definitions apply:

(1) *Pipe.* A straight pipe of uniform outside diameter, with plain or prepared ends.

(2) *Fitting.* Bends, tees and collars with dimensions in accordance with Section Four.

(3) *Special.* Any other manipulated or fabricated pipe.

(4) *Random lengths.* Normal manufacturing lengths falling within a range agreed between the purchaser and manufacturer.

(5) *Exact lengths.* Pipes cut to a specified length on which only a small tolerance is allowed.

(6) *Effective length.* The actual length that a pipe contributes when assembled in a run of piping. This dimension excludes the additional length contributed by a slip-on type coupling when this is used.

(7) *Glass tissue.* A uniformly porous mat made of glass monofilaments in random arrangement bonded with a thermo setting resin.

(8) *Reinforced glass tissue.* A uniformly porous mat made of glass monofilaments in random arrangement, strands of continuous glass yarn being incorporated to give additional longitudinal tensile strength, the whole being bonded with a thermo setting resin.

(9) *Woven glass cloth.* A loom state fabric made of low alkali glass (as specified in B.S. 3396†) uniformly woven from continuous filament yarn to form a porous cloth with selvedges well made, substantially straight and even, or a lock woven square mesh lacquer bonded fabric, average weight 3·2 oz/yd² (109 g/m²).

1.4 Designation

1.4.1 Pipes, fittings and specials shall be designated by their respective outside diameters.

For branch pipes the outside diameter (or diameters) of the through pipe should first be quoted, followed by the outside diameter of the branch.

A collar shall be designated by the outside diameter of the pipe for which it is intended.

* CP 2010, ' Pipe lines '.
† B.S. 3396, ' Woven glass fibre fabrics for plastics reinforcement '.

1.5 Materials

1.5.1 Pipes shall comply with the requirements of B.S. 3601*. Where the purchaser does not specify the type of pipe or grade of steel, this shall be at the option of the manufacturer.

The main body of fittings and specials shall be made from steel of at least the same quality as that used for the pipes, but nozzles or branches may be made of steel to another specification, provided they are at least as strong as the main body.

Steel 35 should not be used for pipes with welded joints or for fabricated fittings and specials.

1.6 Information to be given by the purchaser in the enquiry or order

1.6.1 The purchaser shall state in his enquiry or order:

(1) Type of pipe and grade of steel (1.5.1).
(2) Outside diameter and thickness (2.1.1).
(3) Effective length and whether random or exact lengths are required (2.2.1).
(4) Type of joint required (3.1.1).
(5) Tolerance required at ends for butt welded joint (3.2.2).
(6) Details of fittings and specials required (Section 4) and whether these are to be hydraulically tested.
(7) The working pressure and the temperature if above 100°F (38°C).
(8) Whether pipes, fittings and specials are to be protected externally, internally or both, and the type of protection (Section 5).

NOTE. Where the pipes are for use in or transport through a tropical climate this should be specially stated.

(9) Whether a non-stick finish is required (5.4.7).
(10) Whether materials for completing the external and internal protection at site are required (5.9).
(11) Whether inspection is to be carried out by the purchaser or his representative (1.8.1).
(12) The marking required (1.7.1).

1.7 Marking

1.7.1 Marking shall be the subject of agreement between the purchaser and the manufacturer.

* B.S. 3601, ' Steel pipes and tubes for pressure purposes. Carbon steel: ordinary duties '.

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