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Specification for Tube and pipe fittings for engineering purposes

Part 1. Copper and copper alloys capillary and compression tube fittings for engineering purposes

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The following BSI references relate to the work on this standard:

Committee reference MEE/118 and MEE/118/2. Draft for comment 71/31676

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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:

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*Association of Hydraulic Equipment Manufacturers Ltd	Institution of Civil Engineers
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*British Compressed Air Society	Institution of Heating and Ventilating Engineers
British Electrical and Allied Manufacturers' Association	*Institution of Mechanical Engineers
British Gear Manufacturers' Association	Institution of Mechanical Engineers (Automobile Division)
*British Internal Combustion Engine Manufacturers' Association	Institution of Plant Engineers
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	Royal Institute of British Architects
	Telecommunications Engineering Manufacturing Association

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 Malleable Tube Fittings Association
British Non-ferrous Metals Federation

British Plastics Federation
British Refrigeration and Air Conditioning Association

Co-operating organizations continued on inside back cover



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Amendments issued since publication

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Foreword

This Part of this British Standard, first published in 1953, has been prepared in this first revision under the authority of the Mechanical Engineering Industry Standards Committee, and originally formed one of four parts:

Part 1. Copper and copper alloy capillary and compression tube fittings (for use with fractional o.d. sizes of tubes)

Part 2. Olive, soldered nipple and flared types of copper and copper alloy tube fittings (for use with fractional o.d. sizes of tubes) (under revision)

Part 3. Steel compression pipe fittings (withdrawn, superseded by BS 4368, 'Carbon and stainless steel compression couplings for tubes')

Part 4. Steel nipple pipe fittings for brazing (Unified threads and Unified hexagons) (withdrawn)

This Part of this standard relates to three types of tube fittings for engineering purposes for use in conjunction with copper, copper alloy and other suitable tubing.

(1) *Capillary fittings*, in which the joint is made by the flow of solder by capillarity along the annular space between the outside of the tube and the inside of the socket of the fitting, the size of this annular space being dimensionally accurate within close limits.

(2) *Compression fittings, Type A*, in which the joint is made by the compression of a loose ring or sleeve on to the outside surface of the tube.

(3) *Compression fittings, Type B*, in which the joint is made by the compression of a manipulated portion of the tube at or near its end against the face of the body of the fitting or against a loose ring or sleeve within the fitting.

When Type A compression fittings are to be used with tubes in the annealed condition, reference should be made to the manufacturer to ensure that the make of fitting is suitable for this application.

Type B fittings are not normally suitable for tubes in hard temper but, if required, reference should be made to the manufacturer.

This standard does not attempt the complete dimensional standardization of any of the types of fittings, since the variety of the designs and methods of production already established by the various manufacturers makes any such attempt impracticable. Without seeking to limit the individual refinements of design, which are the distinctive feature of the proprietary product, this standard does, however, lay down such dimensions and requirements as are essential to ensure satisfactory installation and performance.

The fittings covered by this standard are for use with tubes designated by their outside diameters in millimetres such diameters being equal (subject to appropriate tolerances) to the sizes of fitting stated in Tables 4 and 6, and primarily with copper and copper alloy tubes of the sizes given in BS 2871, 'Copper and copper alloys. Tubes : Part 2 'Tubes for general purposes'.

A complementary British Standard has been published as BS 864 : Part 2, 'Capillary and compression tube fittings of copper and copper alloy' for use with copper and copper alloy tube conforming to the requirements of BS 2871 : Part 1, 'Copper tubes for water, gas and sanitation'. The fittings covered by BS 864 are intended primarily for use in water and gas piping systems and also engineering purposes where suitable.

Two appendices are included, giving methods of specifying fittings and the sizes of copper and copper alloy tubes as contained in BS 2871 : Part 2.

NOTE. All dimensions are in millimetres unless otherwise stated, and all pressures are gauge pressures.

British Standard Specification for Tube and pipe fittings for engineering purposes

Part 1. Copper and copper alloy capillary and compression tube fittings for engineering purposes

1. General requirements

1.1 Scope

1.1.1 This British Standard covers copper and copper alloy tube fittings for use with copper, copper alloy and other suitable tubing for a wide range of engineering purposes.

1.1.2 It applies to capillary fittings and to compression fittings, Types A and B, in sizes ranging from 4 mm to 42 mm inclusive.

1.1.3 These fittings are intended primarily for use with tubes of the outside diameters given in BS 2871 : Part 2.

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

1.2 Design

1.2.1 The fittings shall be proportioned consistent with the strength required.

1.2.2 The fittings shall be free from internal fins or other irregularities which might restrict the free flow or cause turbulence of the fluid and shall be so designed that the resistance to the flow through the fittings shall be reduced to a minimum.

1.2.3 Where appropriate the across flats dimensions for nuts and on the coupling body shall be in accordance with Table 5.

1.2.4 All straight fittings with screwed stud ends shall have provision for tightening.

1.3 Workmanship

The fittings shall be clean and neatly finished, free from burrs, fins, sharp edges and other defects.

1.4 Designation of sizes of fittings

The size by which the fitting is designated shall be the outside diameter of the tube with which it is to be used. The method of specifying fittings with unequal or screwed stud ends shall be in accordance with Appendix A, together with the letters mm.

1.5 Screw threads

1.5.1 **Fittings.** The screw threads used in the fittings, except those on stud ends (connector ends), shall be at the option of the manufacturer.

The external and internal threads shall be chamfered at the face of the fittings to an included angle of 90°. The diameter of the chamfer shall be equal to the minor or major diameter of the thread as appropriate.