

Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings

Part 4. Specification for chlorinated polyvinyl chloride (PVC-C) pipes and associated fittings and solvent cement

Tubes et raccords en matières
thermoplastiques, eau chaude et eau froide,
pour usages domestiques et installations de
chauffage dans les bâtiments - Spécifications
Partie 4. Tubes et raccords en polychlorure de
vinyle chloré (PVC-C)

Thermoplastische Rohre und Formstücke für
die Warm- und Kaltwasserversorgung und
Heizung für Grundstücke und Gebäude
Teil 4. Rohre und Formstücke aus chloriertem
Polyvinylchlorid

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Plastics Standards Policy Committee (PLM/-) to Technical Committee PLM/9, upon which the following bodies were represented:

British Board of Agrément
British Gas plc
British Plastics Federation
British Plumbing Fittings Manufacturers' Association
British Valve and Actuator Manufacturers' Association
Department of the Environment (Building Research Establishment)
Department of the Environment (Construction Industries Directorate)
Department of the Environment (Property Services Agency)
Department of Transport
Electricity Supply Industry in England and Wales
Engineering Equipment and Materials Users' Association
Health and Safety Executive
Institute of Building Control
Institution of Civil Engineers
Institution of Gas Engineers
Institution of Production Engineers
Institution of Water and Environmental Management
National Association of Plumbing, Heating and Mechanical Services Contractors
Plastics and Rubber Institute
Plastics Land Drainage Manufacturers' Association
Royal Institute of Public Health and Hygiene
Society of British Gas Industries
Society of British Water Industries
Water Companies Association
Water Research Centre
Water Services Association of England and Wales

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

Heating and Ventilating Contractors' Association
Institute of Domestic Heating and Environmental Engineers

This British Standard, having been prepared under the direction of the Plastics Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 May 1990

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Thermoplastics pipes and associated fittings
for hot and cold water for domestic purposes
and heating installations in buildings
Part 4. Specification for chlorinated polyvinyl
chloride (PVC-C) pipes and associated fittings
and solvent cement

Correction

AMD 6399
July 1991

Clause B.3 Procedure

In line 5 of paragraph 1, delete ' $0 \pm 5\text{ }^{\circ}\text{C}$ ' and substitute ' $20 \pm 3\text{ }^{\circ}\text{C}$ '.

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Foreword

This Part of BS 7291 has been prepared under the direction of the Plastics Standards Policy Committee.

It specifies, in accordance with Part 1 of BS 7291, specific requirements for pipes made of chlorinated polyvinyl chloride and associated fittings intended for systems based on pipes having a nominal outside diameter between 12 mm and 63 mm inclusive for the use of hot and cold water for domestic purposes, including heating. It includes material requirements, dimensions, mechanical properties and performance requirements, based on mechanical jointing or, for pairs of PVC-C components only, jointing by solvent cement, to supplement the general requirements of Part 1, which are also applicable.

The pipe sizes and dimensions specified are in accordance with BS 5556.

No dimensional requirements are specified for fittings because the performance requirements included for fittings when tested individually or in assemblies with pipe are intended to ensure that the dimensions of the fittings are satisfactory for jointing purposes and pressure containment.

Attention is drawn to BS 7291 : Part 2, which gives corresponding requirements for polybutylene (PB) pipes and associated fittings, and to BS 7291 : Part 3, which gives corresponding requirements for crosslinked polyethylene (PE-X) pipes and associated fittings.

Attention is also drawn to BS 5955 : Part 8, which gives requirements and guidance on the correct application and installation of thermoplastics pipes and fittings for the conveyance of domestic hot and cold water.

In preparing this British Standard, account has been taken of concurrent work by Technical Committee 138 of the International Organization for Standardization (ISO), which is not yet sufficiently advanced or aligned with the philosophies in this standard for use in its place.

This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality system against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

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

Section 1. General

Before reading this Part, it is essential to read BS 7291 : Part 1 issued separately.

1 Scope

This Part of BS 7291 specifies requirements for chlorinated polyvinyl chloride (PVC-C) pipes and associated fittings intended for the conveyance of cold water, including potable water, and heated water, for use in domestic hot and cold water distribution and heating installations within buildings. These requirements supplement the general requirements given in Part 1¹⁾ of BS 7291, which are also applicable.

It gives general requirements for materials to be used for or in the form of PVC-C pipes or PVC-C fittings and for the solvent cement required to join them and specific requirements for PVC-C pipe and associated fittings and joints based on pipe sizes corresponding to nominal outside diameters from 12 mm to 63 mm inclusive.

Methods of test, associated guidance and information on quality control testing are given in appendices.

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

2 Materials

2.1 PVC-C base material

The material from which the PVC-C pipe and the bodies of PVC-C fittings are manufactured shall comprise a copolymer and/or chlorinated derivative of polyvinyl chloride containing more chlorine than a corresponding mass of polyvinyl chloride; it shall otherwise contain only pigment and those additives that are needed for its manufacture and subsequent conversion into pipes and/or fittings complying with this Part of BS 7291.

2.2 Reworked material

If reworked material is used in the manufacture of PVC-C pipes or of associated PVC-C or PB fittings otherwise complying with this Part or Part 2 of BS 7291, as applicable, it shall comprise the manufacturer's own clean reworked material and be of the same grade as any material to which it is added. No other reworked material shall be admissible.

2.3 Other materials

If materials other than those complying with 2.1 or 2.2 are used for other component parts of fittings, e.g. compression rings, or fittings, the complete fitting shall comply with clauses 7 to 10 inclusive as applicable.

2.4 Material in the form of pipe or fittings

2.4.1 Opacity

PVC-C pipe and associated fittings shall comply with 5.7 of Part 1.

2.4.2 Pigmentation

For thermoplastics components, when tested in accordance with BS 2782 : Method 1106A : 1983, any pigment dispersion shall be at least as uniform as that shown in photomicrograph 2 of figure 1 of BS 2782 : Method 1106A : 1983, i.e. appearances similar to those shown in photomicrographs 3 to 6 of that figure shall be unacceptable.

NOTE. No range of colour(s) is specified for pipes or fittings in accordance with this Part of BS 7291 but attention is drawn to 2.4.1, which may be satisfied through incorporation of pigment(s).

2.4.3 Effect of materials on the quality of potable water

Pipes and fittings shall comply with 5.1 of Part 1, as applicable.

2.4.4 Effect of materials on the reactivity of recirculated water

The manufacturer shall identify in accordance with 5.2.1 of Part 1 any constituent other than polyvinyl chloride as such or modified by direct chlorination that may be leached from the PVC-C pipe or fittings when used in any application for which the class of the pipe or fitting is suitable, and means by which such leaching shall be prevented or controlled (see also 2.4.6).

2.4.5 Long term hydrostatic strength

When tested with or without a coating as applicable (see 2.4.4 and 2.5), pipes shall comply with 5.3 of Part 1.

2.4.6 Resistance to leaching of chlorides

When tested in accordance with appendix A, the chloride content of the test water shall not increase by more than 150 p.p.m.

2.5 Coatings

If a coating is incorporated with or applied to a pipe or fitting, it shall comply with 4.3 of Part 1

¹⁾ In this standard, all specific references to Part 1 relate to BS 7291 : Part 1 : 1990.

and shall withstand handling and installation in accordance with BS 5955 : Part 8.

2.6 Elastomeric joint rings

If elastomeric rings are incorporated or used in joints, they shall comply with the requirements of BS 2494 : 1986 for joint rings of type S or H, as applicable.

2.7 Solvent cement

The solvent cement shall comply with section four and shall enable jointed PVC-C pipes and/or fittings to comply with Part 1 and this Part of BS 7291.

3 Marking and associated information

3.1 Pipes made of chlorinated polyvinyl chloride shall be clearly marked at intervals not exceeding 1 m with the following information:

- (a) the manufacturer's identification, as a clear text or logo;
- (b) the number and date of this Part of BS 7291; e.g. BS 7291 : Part 4 : 1990 ¹⁾;
- (c) the classification of the pipe in accordance with table 1 of Part 1;
- (d) the nominal size in accordance with table 1;
- (e) the symbol for the pipe material, i.e. PVC-C.

NOTE. The information should preferably be marked in the order given.

3.2 Plastics fittings for use with chlorinated polyvinyl chloride pipes shall be marked with the following information:

- (a) the manufacturer's identification, as a clear text or logo;
- (b) the number and date of this Part of BS 7291, e.g. BS 7291 : Part 4 : 1990 ¹⁾;
- (c) the classification of the fitting, in accordance with table 1 of Part 1;
- (d) the nominal size and the designation of the fitting or the nominal size of each socket or spigot thereon, in accordance with clause 9;
- (e) the fitting body material symbol, in accordance with ISO 1043 : Part 1, as applicable, e.g. PB, PVC-C.

In cases where marking of the actual component is not practicable or is restricted, e.g. because of the size or form of the fitting, each fitting shall carry the manufacturer's identification and shall be supplied in a parcel or with a label where the parcel or label shall be marked with any of the information that is required in accordance with **3.2** (b) to **3.2** (e) and is omitted from the markings on the fitting.

NOTE. The information should preferably be marked in the order given.

¹⁾ Marking BS 7291 : Part 4 : 1990 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.