BS 7291-2:2010+A1:2023

BSI Standards Publication

Thermoplastics pipe and fitting systems for hot and cold water for domestic purposes and heating installations in buildings

Part 2: Specification for polybutylene (PB) pipe and associated fittings

urrently in preview, click buy full versi

bsi.

urrently in preview, click buy full versi

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2023

Published by BSI Standards Limited 2023

ISBN 978 0 580 24830 2

ICS 91.140.60, 83.140.30

The following BSI references relate to the work on this document:
Committee reference PRI/88/2
Draft for comment 09/30208676 DC, 22/30465274 DC

Amendments/corrigenda issued since publication

Date	Text affected
April 2023	A1: See Foreword

© THE BRITISH STANDARDS INSTITUTION 2023 – ALL RIGHTS RESERVED

Contents

		Page
	Foreword	**II**
1	Scope	1
2	Normative references	1
3	Materials	2
3.1	PB base material	2
3.2	Reworked material	2
3.3	Other materials	2
3.4	Material in the form of pipe or fittings	2
3.5	Elastomeric joint seals	3
4	PB pipes	3
4.1	Dimensions	3
	Table 1 — Dimensions of PB pipes having nominal sizes and outside diameters consistent with those specified in BS EN 1057[A)]	3
	Table 2 — Dimensions of PB pipes having nominal sizes and outside diameters consistent with those specified in BS ISO 4065	4
4.2	Mechanical and hydrostatic properties of PB pipes	4
5	Fittings for PB pipes	4
5.1	Thermoplastics materials	4
5.2	Metallic fittings	5
5.3	Designation of sizes of fittings	5
5.4	Mechanical and hydrostatic properties of fittings for PB pipes	5
6	Marking and associated information	6
6.1	PB pipes	6
6.2	Plastics fittings for use with PB pipes	6
Annex A	(normative) **Method of test for resistance to thermal ageing**	**7**
Annex B	(normative) **Crystallization, transformation and conditioning: Test procedure**	**8**
Annex C	(normative) **Method of test for resistance to pull-out of assembled joints**	**8**
	Table C.1 — Pull-out test forces for joints of pipes conforming to Table 1 and/or associated fittings	9
	Table C.2 — Pull-out test forces for joints of pipes conforming to Table 2 and/or associated fittings	9
Annex D	(informative) **Guidance on factory control procedures**	**10**
	Table D.1 — Applicability of requirements and test methods	11
	Bibliography	**12**

urrently in preview, click buy full versi

Summary of pages

This document comprises a front cover, an inside front cover, pages I to IV, pages 1 to 12, an inside back cover and a back cover.

Foreword

Publishing Information

This part of BS 7291 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 April 2010. It was prepared by Subcommittee ⟨A1⟩ PRI/88/2, *Plastic piping for pressure applications* ⟨A1⟩, under the authority of Technical Committee PRI/88, *Plastics piping systems*. A list of organizations represented on these committees can be obtained on request to the committee manager.

Supersession

BS 7291-2:2010+A1:2023 supersedes BS 7291-2:2010, which is withdrawn.

Information about this document

Text introduced or altered by Amendment No. 1 is indicated in the text by tags ⟨A1⟩ ⟨A1⟩. Minor editorial changes are not tagged.

PB polymer is widely known as Polybutylene. It is also referred to as Polybutene, Polybut-1-ene and Polybutene-1 (PB-1).

Attention is drawn to BS 7291-3, which specifies corresponding requirements for cross-linked polyethylene (PE-X) pipes and associated fittings.

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

Product certification/inspection/testing. Users of this British Standard are advised to consider the desirability of third-party certification/inspection/testing of product conformity to this British Standard. Appropriate conformity assessment arrangements are described in BS EN ISO/IEC 17025. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Assessed capability. Users of this British Standard are advised to consider the desirability of quality system assessment and registration against the appropriate standard in the BS EN ISO 9000 series by an accredited third-party certification body.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/standards, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the *Shorter Oxford English Dictionary* is used (e.g. “organization” rather than “organisation”).

Currently in preview, click buy full version

 © THE BRITISH STANDARDS INSTITUTION 2023 – ALL RIGHTS RESERVED

Requirements in this document are drafted in accordance with the *Rules for the structure and drafting of UK standards:2022*, subclause **G.1.1**, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this document.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

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

In particular, attention is drawn to the following specific regulations:

- The Health and Safety at Work, etc Act 1974 [1]
- The Water Supply (Water Fittings) Regulations 1999 [2]

urrently in preview, click buy full versi

1 Scope

This part of BS 7291 specifies general requirements and methods of test for polybutylene (PB) pipe and fitting systems intended for use within buildings for the conveyance of cold water, including drinking water, and heated water for use in domestic hot and cold water distribution and heating installations. These requirements supplement the general requirements in BS 7291-1, which are also applicable.

NOTE 1 Before reading this part, it is essential to read BS 7291-1.

NOTE 2 Methods of test are given in Annex A, Annex B and Annex C. Annex D gives guidance on factory control procedures.

This standard specifies general requirements for materials to be used for, or in the form, of PB monolayer, multilayer or barrier pipes, and associated fittings and components. Particular requirements are also specified for PB pipe alone or jointed with push-fit, fusion or compression fittings conforming to BS 7291 or other British Standards intended for use with pipes conforming to this part.

This part of BS 7291 provides for pipes dimensioned to suit two established metric series: BS ISO 4065 for thermoplastics pipes generally and BS EN 1057, for compatibility with copper pipework systems widely used for these applications.

This British Standard is applicable only to Class "S" pipes and fittings.

It does not specify dimensional requirements for fittings because the performance requirements specified 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.

NOTE 3 Pipes and fittings of non-barrier PB are to some extent permeable to oxygen; hence, if they are used for the primary circuit(s) of a heating system, it might be beneficial to add a corrosion inhibitor to the fluids circulating therein. In such a case the manufacturer(s) of the pipe and/or fitting should, upon request, provide advice in accordance with BS 5955-8. This advice should include selection of a compatible corrosion inhibitor and/or methods for reducing the permeability.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5214-2, *Specification for testing machines for rubbers and plastics – Part 2: Constant rate of force application machines*

〈A1〉 BS 7291-1:2010+A1:2023 〈A1〉, *Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings – Part 1: General requirements*

BS EN 681-1:1996, *Elastomeric seals – Material requirements for pipe joint seals used in water and drainage applications – Part 1: Vulcanized rubber*

BS EN 1057, *Copper and copper alloys – Seamless, round copper tubes for water and gas in sanitary and heating applications*

〈A1〉 Text deleted 〈A1〉

BS EN 12294, *Plastic piping systems – Systems for hot and cold water – Test method for leaktightness under vacuum*

BS EN ISO 1043-1, *Plastics – Symbols – Part 1: Basic polymers and their special characteristics*

Currently in preview, click buy full version