BRITISH STANDARD

BS EN
13244-4:2002

Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) —

Part 4: Valves

The European Standard EN 13244-4:2002 has the status of a British Standard

ICS 23.060.01; 93.030

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 13244-4:2002. No existing British Standard will be superseded by implementation of this part of this European Standard.

NOTE 1 Collectively, EN 13244-1, EN 13244-2 and EN 13244-5 supersede:

— BS 6437:1984, *Specification for polyethylene pipes (type 50) in metric diameters for general purposes*;

which will be declared obsolescent by December 2004.

The UK participation in its preparation was entrusted by Technical Committee PRI/88 (previously PRI/61), Plastics piping systems, to Subcommittee PRI/88/2 (previously PRI/61/2), Plastics piping systems for pressure applications, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

NOTE 2 It was decided not to proceed with the publication of prEN 13244-6, *Recommended practice for installation* and that existing national practices would be applicable. In the UK, in the absence of a British Standard covering installation, it is the opinion of Technical Committee PRI/88, Plastics piping systems, that reference to the *Polyethylene Pipe Systems Manual*[1)], a joint publication of WRc and BPF Plastic Pipes Group represents established UK practice.

NOTE 3 Part 7 has been prepared as a CEN/TS, to allow further development. CEN/TS 13244-7 is not mandatory under the Public Procurement Directive.

Attention is drawn to the following statutory regulations:

Health and Safety at Work etc. Act 1974 and subsequent regulations.

Attention is also drawn to any appropriate safety precautions. It is assumed in the drafting of a standard that the execution of its provisions is entrusted to appropriately qualified people.

[1)] WRc/BPF PLASTIC PIPES GROUP. *Polyethylene Pipe Systems Manual*. Swindon: WRc, 2002.

This British Standard, was published under the authority of the Standards Policy and Strategy Committee on 11 December 2003

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 43029 4

The UK National annex NA attached to this standard provides additional information on the selection and installation of piping systems and components in the UK.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 19 and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13244-4

December 2002

ICS 23.060.01; 93.030

English version

Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage - Polyethylene (PE) - Part 4: Valves

Systèmes de canalisations en plastique pour les applications générales de transport d'eau, de branchement et de collecteurs d'assainissement, enterrés sous pression - Polyéthylène (PE) - Partie 4: Robinets

Kunststoff-Rohrleitungssysteme für erd- und oberirdisch verlegte Druckrohrleitungen für Brauchwasser, Entwässerung und Abwasser - Polyethylen (PE) - Teil 4: Armaturen

This European Standard was approved by CEN on 16 October 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 13244-4:2002 E

Contents

Foreword

This document (EN 13244-4:2002) has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by December 2004.

For components which have conformed to the relevant national standard before December 2002, as shown by the manufacturer or by a certification body, the national standard may continue to be applied until the December 2004.

It has been prepared in liaison with CEN/TC 165 "*Waste water engineering*".

This European Standard is a Part of a System Standard for plastics piping systems of a particular material for a specified application. There are a number of such System Standards.

System Standards are based on the results of the work being undertaken in ISO/TC 138 "*Plastics pipes, fittings and valves for the transport of fluids*", which is a Technical Committee of the International Organization for Standardization (ISO).

They are supported by separate standards on test methods to which references are made throughout the System Standard.

The System Standards are consistent with standards on general functional requirements and standards on recommended practice for installation.

EN 13244 consists of the following Parts, under the general title *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE)*:

— *Part 1: General*

— *Part 2: Pipes*

— *Part 3: Fittings*

— *Part 4: Valves (this standard)*

— *Part 5: Fitness for purpose of the system*

— *Part 7: Guidance for the assessment of conformity* (to be published as a CEN/TS)

NOTE It was decided not to publish a Part 6: Recommended practice for installation. Instead, existing national practices would be applicable.

This Part of EN 13244 includes the following:

— Bibliography

System Standards for piping systems of other plastics materials used for the conveyance of water, drainage and sewerage under pressure include the following:

prEN 14364, *Plastics piping systems for pressure and non-pressure drainage and sewerage — Glass-reinforced thermosetting (GRP) plastics based on polyester resin (UP).*

EN 1456, *Plastics piping systems for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U).*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

EN 13244, of which this is Part 4, specifies the requirements of a piping system and its components when made from polyethylene (PE). It is intended to be used for buried and above-ground pressure systems for water for general purposes, drainage and sewerage, including vacuum systems.

Requirements and test methods for material and components, other than valves, are specified in EN 13244-1, EN 13244-2 and EN 13244-3. Characteristics for fitness for purpose are covered in EN 13244-5 and prCEN/TS 13244-7 gives guidance for the assessment of conformity.

This Part of EN 13244 covers the characteristics of valves.

1 Scope

This Part of EN 13244 specifies the characteristics of valves or valve bodies made from polyethylene (PE) intended for buried and above-ground pressure systems for water for general purposes, drainage and sewerage. It is also applicable for vacuum sewer systems.

NOTE 1 Water for general purposes is not intended for human consumption and components conforming to this standard should not be used in systems conveying water for human consumption. For PE components intended for the conveyance of water intended for human consumption and raw water prior to treatment, see EN 12201 [1].

NOTE 2 Valves made from material other than polyethylene (PE) designed to (a) relevant standard(s) can be used in PE piping systems conforming to EN 13244 when they have relevant PE connection ends for butt fusion or electrofusion (see EN 13244-3).

It also specifies the test parameters for the test methods referred to in this standard.

In conjunction with other Parts of EN 13244 (see Foreword), it is applicable to PE valves, their joints and to joints with components of other materials intended to be used as follows:

— buried in the ground;

— sea outfalls;

— laid in water;

— above-ground, including pipes suspended below bridges;

— a maximum operating pressure, MOP, up to and including 25 bar[1)];

— an operating temperature of 20 °C as a reference temperature.

NOTE 3 For applications operating at constant temperatures greater than 20 °C and up to 40 °C, see annex A of EN 13244-1:2002.

EN 13244 covers a range of maximum operating pressures and gives requirements concerning colours and additives.

NOTE 4 It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national guidance or regulations and installation practices or codes.

This Part of EN 13244 covers valves for pipes with a nominal outside diameter $d_n \leq 225$ mm.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber.*

EN 681-2, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 2: Thermoplastic elastomers.*

1) 1 bar = 10^5 N/m^2.

EN 728, *Plastics piping and ducting systems — Polyolefin pipes and fittings — Determination of oxidation induction time.*

EN 917:1997, *Plastics piping systems — Thermoplastics valves — Test methods for resistance to internal pressure and leaktightness.*

EN 1680, *Plastics piping systems — Valves for polyethylene (PE) piping systems — Test method for leaktightness under and after bending applied to the operating mechanism.*

EN 1705, *Plastics piping systems — Thermoplastics valves — Test method for the integrity of a valve after an external blow.*

EN 12100, *Plastics piping systems — Polyethylene (PE) valves — Test method for resistance to bending between supports.*

EN 13244-1:2002, *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) — Part 1: General.*

EN 13244-2, *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) — Part 2: Pipes.*

EN 13244-3:2002, *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) — Part 3: Fittings.*

EN 13244-5, *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) — Part 5: Fitness for purpose of the system.*

EN 28233:1990, *Thermoplastic valves — Torque — Test method (ISO 8233:1988).*

EN ISO 1133:1999, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133:1997).*

prEN ISO 3126:1999, *Plastics piping systems — Plastics piping components — Measurement and determination of dimensions (revision of prEN 496:1991 and ISO 3126:1974) (ISO/DIS 3126:1999).*

ISO 5208:1993, *Industrial valves — Pressure testing of valves.*

ISO 10933:1997, *Polyethylene (PE) valves for gas distribution systems.*

3 Definitions, symbols and abbreviations

For the purposes of this European Standard, the terms, definitions, symbols and abbreviations given in EN 13244-1 together with the following apply.

3.1
external leaktightness
leaktightness of the body enveloping the space containing the water, with respect to the atmosphere

3.2
internal leaktightness
leaktightness between the inlet and the outlet of the valve, with the valve in the closed position

3.3
leaktightness test
test for both of the following characteristics:

a) the internal leaktightness of the valve's seat when closed and pressurised from either side;

b) the external leaktightness of the valve when half open

3.4
initiating torque
torque required to initiate movement of the obturator

3.5
running torque
torque required to achieve full opening or closing of the valve at maximum allowable operating pressure

3.6
leakage
seepage of water through the valve body, or any component of the valve

3.7
valve body
main part of a valve which contains the obdurating device (rotating member, the seat, the packing seals and the operating stop, as applicable) and provides the ends for connection to the PE pipe/fittings

3.8
operating cap
part of a valve for connection with the operating key which allows the opening and closing of the valve

4 Material

4.1 Compound for PE valve bodies

The compound from which the body of the valve, with spigot end or electrofusion socket is made shall conform to EN 13244-1.

4.2 Material for non-polyethylene parts

4.2.1 General

All components shall conform to the relevant European Standard(s). Alternative standards may be utilised in cases where suitable European Standard(s) do not exist provided a fitness for purpose can be demonstrated.

The materials and the constituent elements used in making the valves (including elastomers, greases and any metal parts that may be used) shall be as resistant to the external and internal environment as the other elements of the piping system and shall have a life expectancy under the following conditions at least equal to that of the PE pipes conforming to EN 13244-2 with which they are intended to be used:

a) during storage;

b) under the effect of the water being conveyed;

c) with respect to the service environment and operating conditions.

The requirements for the level of material performance of non-polyethylene parts shall be at least as stringent as that of the PE compound for the piping system.

Valve material in contact with the PE pipe shall not adversely affect the pipe performance or initiate stress cracking.

NOTE Metal valve bodies for PE piping systems up to 25 bar should conform to the relevant standard of CEN/TC 69 *Industrial valves*.

4.2.2 Metal parts

All metal parts susceptible to corrosion shall be adequately protected.

When dissimilar metallic materials are used which may be in contact with moisture, steps shall be taken to avoid the possibility of galvanic corrosion.

4.2.3 Elastomers

Elastomeric seals shall conform to EN 681-1 or EN 681-2, as applicable.

4.2.4 Other materials

Greases or lubricants shall not exude onto fusion areas and shall not affect the long-term performance of the PE valve or valve body to an extent that would prevent conformity to this standard.

4.2.5 Assembly

Valves shall be assembled according to manufacturer's procedures and any component used in the assembly shall not prevent conformity of the valve to this standard.

5 General characteristics

5.1 Appearance of the valve

When viewed without magnification, the internal and external surfaces of valves shall be smooth, clean and free from scoring, cavities and other surface defects to an extent that would prevent conformity of the valve to this standard.

5.2 Design

5.2.1 General

The design of the valve shall be such that, when assembling the valve onto the corresponding pipe or other components, the electrical coils and/or seals are not displaced.

5.2.2 Valve body

The valve body may be manufactured either as one piece or from pieces assembled together.

The body of the valve shall be such that it cannot be dismantled on site without the use of special tools.

5.2.3 Operating cap

The operating cap shall be integral with or connected to the stem in such a way that disconnection is impossible without special equipment.

The position of the obturator shall be clearly indicated on the top side of the operating cap.

Stops shall be provided at the fully open and closed positions and shall conform to the stop resistance requirements given in Table 2.

5.2.4 Seals

The seals shall be so mounted as to be resistant to normally occurring mechanical loads. Creep and cold flow effects shall be taken into account. Any mechanism that puts a loading on the seals shall be permanently locked. Line pressure shall not be used as the sole means of seal activation.

5.3 Colour

Unless other colours are specified to conform to national regulations the colour of the PE valve body shall be black.

NOTE Where national regulations require an alternative colour to black, pipes coloured blue or black with blue stripes should not be used for this application. The blue colour indicates that the components are suitable for the conveyance of water intended for human consumption as specified in EN 12201[1].

6 Geometrical characteristics

6.1 General

Each valve shall be characterised by its dimensions and associated end connections.

Technical data given by the manufacturer shall include the following information:

a) the dimensional characteristics, by working drawings;

b) the assembly instructions.

6.2 Measurement of dimensions

The dimensions of the valve shall be measured in accordance with prEN ISO 3126. In the case of dispute the measurement of dimensions shall be made not less than 24 h after manufacture after being conditioned for at least 4 h at (23 ± 2) °C.

6.3 Wall thickness at any point of the PE valve body

The wall thickness of the PE valve body, E, at any point that is subjected to line pressure shall be equal to or greater than e_{min} for the corresponding pipe when the valve body and the corresponding pipe are made from a polyethylene with the same MRS designation. If the valve body is produced from a polyethylene with an MRS designation different from that of the corresponding pipe, the preferred relationship between the wall thickness of the valve body, E, and the pipe, e_{min}, shall conform to Table 1.

Table 1 — Relationship between pipe and valve wall thicknesses

Material		Relationship between valve wall thickness, E, and pipe wall thickness, e_{min}
Pipe	Valve	
PE 80	PE 100	$E \geq 0{,}8e_{min}$
PE 100	PE 80	$E \geq 1{,}25e_{min}$

Any changes in the wall thickness of the valve body shall be gradual in order to prevent stress concentrations.

6.4 Dimensions of spigot ends for valves

The dimensions of spigot ends shall conform to Table 3 of EN 13244-3:2002.

6.5 Dimensions of valves with electrofusion sockets

The dimensions of electrofusion sockets shall conform to Table 1 of EN 13244-3:2002.

6.6 Dimensions of the operating cap

The dimension of the operating cap shall be designed so it can be operated with a $50\,^{+0,5}_{0}$ mm square socket, (40 ± 2) mm depth.

7 Mechanical characteristics for assembled valves

7.1 General

All tests shall be carried out on valves assembled with pipe(s) conforming to EN 13244-2, the pipe shall be of the same PE material type and pressure rating as the valve. Assembly of the valve and pipe(s) shall be achieved in accordance with the technical instructions and the extreme installation conditions recommended by the

manufacturer. The limit conditions (geometry, ovality, dimensional tolerances of pipe and valve, temperature, welding characteristics) shall be stated by the manufacturer.

NOTE The properties of an assembled valve depend on the properties of the pipes and the valve and on the conditions of their installation (e.g. geometry, temperature, type and method of conditioning, assembling and fusion procedures).

The technical description by the manufacturer shall include at least the following information:

a) laying conditions (e.g. valve temperature limits);

b) assembly instructions;

c) for valves with electrofusion sockets, the fusion instructions (power requirements or fusion parameters with limits).

7.2 Conditioning

Unless otherwise specified by the applicable test method, test pieces shall be conditioned at (23 ± 2) °C before testing in accordance with Table 2.

7.3 Requirements

When tested in accordance with the test methods as specified in Table 2 and using the indicated test parameters, the valves shall have mechanical characteristics conforming to the requirements given in Table 2.

NOTE Attention is drawn to the requirements specified in prEN 1074-1[2] and prEN 1074-2[3].

Table 2 — Mechanical characteristics for assembled valve

Characteristics	Requirements	Test parameters		Test method
		Parameters	Value	
Hydrostatic strength at 20 °C, 100 h	No failure during test period	Number of test pieces[a] Conditioning (24 h after fusion) Free length Type of test Test temperature Test period Cicumferential (hoop) stress for PE 63 PE 80 PE 100	3 Shall conform to EN 917:1997 2 d_n Water-in-water 20 °C 100 h 8 MPa 10 MPa 12,4 MPa	Method A of EN 917:1997
Hydrostatic strength at 80 °C, 165 h	No failure during test period	Number of test pieces[a] Conditioning (24 h after fusion) Free length Type of test Test temperature Test period Cicumferential (hoop) stress for: PE 63 PE 80 PE 100	3 Shall conform to EN 917:1997 2 d_n Water- in- water 80 °C[b] 165 h 3,5 MPa 4,5 MPa 5,4 MPa	Method A of EN 917:1997
Hydrostatic strength at 80 °C	No failure during test period	Number of test pieces[a] Conditioning (24 h after fusion) Free length Type of test Test temperature Test period Circumferential (hoop) stress for: PE 63 PE 80 PE 100	3 Shall conform to EN 917:1997 2 d_n Water-in-water 80 °C 1000 h 3,2 MPa 4,0 MPa 5,0 MPa	Method A of EN 917:1997
Leaktightness of seat and packing	No leakage during test period	Number of test pieces[a] Test temperature Type of test Test pressure Duration of test Test pressure Duration of test	Shall conform to ISO 5208:1993 23 °C Air or nitrogen 25 mbar 24 h 1,5 × PN 30 s	ISO 5208:1993
Operating torque	Max. operating torque[c] for $d_n \leq 63$: 35 N·m $63 < d_n \leq 125$: 70 N·m $125 < d_n \leq 225$: 150 N·m	Test temperature Number of test pieces[a]	0 °C/40 °C 1	EN 28233:1990
Stop resistance	The test piece shall fulfil. No failure at stops	Test temperature Number of test pieces[a] Torque	0 °C/40 °C 1 Two times the value of the max. measured operating torque measured with min. 150 N·m during 15 s.	EN 28233:1990

Table 2 — (*concluded*)

Characteristics	Requirements	Test parameters		Test method
		Parameters	Value	
Resistance to bending between supports	No leakage and maximum value for operating torque	Load applied for: $63 < d_n \leq 125$ $125 < d_n \leq 225$ Number of test pieces [a]	 3 kN 6 kN 1	EN 12100
Leaktightness under tensile load	No leakage and maximum value for operating torque	Test temperature Test pressure Number of test pieces [a]	23 °C 25 mbar Shall conform to ISO 10933:1997	ISO 10933:1997
Actuation mechanism resistance	1,5 × value of the operating torque	Test pressure Test temperature Number of test pieces [a]	6 bar 23 °C 1	EN 28233:1990
Leaktightness under and after bending applied to the operating mechanism	No leakage	Number of test pieces [a]	1	EN 1680
Impact loading	No leakage and maximum value for operating torque	Drop height Mass of the striker Test temperature Number of test pieces [a]	2 m 2,5 kg 0 °C 1	EN 1705
Multiple test [d]				
1) Resistance to long term internal pressure loading	No leakage and maximum value for operating torque	Test temperature Test period Free length Type of test Number of test pieces [a] Test pressure for: PE 63 PE 80 PE 100	23 °C 1000 h 2 d_n Water-in-water 1 1,25 × PN 1,25 × PN 1,25 × PN	Method A of EN 917:1997
2) Leaktightness of seat and packing	Shall conform to the requirements given in this table			ISO 5208:1993
3) Operating torque	Shall conform to the requirements given in this table			EN 28233:1990
4) Impact loading	Shall conform to the requirements given in this table			EN 1705

[a] The number of test pieces given indicate the quantity required to establish a value for the characteristic described in the table. The number of test pieces required for factory production control and process control should be listed in the manufacturer's quality plan for guidance see prCEN/TS 13244-7[4].

[b] Premature ductile failures are not taken into account. For retest procedure see 7.4.

[c] Neither the initiating torque nor the running torque shall exceed the values given in this table. It shall not be possible to operate the valve by hand without the operating key.

[d] As soon as possible after the completion of the internal pressure test the other three tests shall be carried out on the valve in the order stated.

7.4 Retest in case of failure of hydrostatic strength at 80 °C

A fracture in a brittle mode in less than 165 h shall constitute a failure, however if a sample in the 165 h test fails in a ductile mode in less than 165 h, a retest shall be performed at a selected lower stress in order to achieve the minimum required time for the selected stress obtained from the line through the stress/time points given in Table 3.

Table 3 — Test parameters for the retest of the hydrostatic strength at 80 °C

PE 63		PE 80		PE 100	
Stress MPa	Test period h	Stress MPa	Test period h	Stress MPa	Test period h
3,5	165	4,5	165	5,4	165
3,4	295				
3,3	538	4,4	233	5,3	256
3,2	1 000	4,3	331	5,2	399
		4,2	474	5,1	629
		4,1	685	5,0	1 000
		4,0	1 000		

8 Physical characteristics

8.1 Conditioning

Unless otherwise specified by the applicable test method, the test pieces shall be conditioned at (23 ± 2) °C before testing in accordance with Table 4.

8.2 Requirements

When tested in accordance with the test methods specified and using the test parameters given in Table 4, the valves shall conform to the requirements given in Table 4.

Table 4 — Physical characteristics of PE valves

Characteristics	Requirements	Test parameters		Test method
		Parameters	Value	
Oxidation induction time	≥ 20 min	Test temperature Number of test pieces [a]	200 °C [b] 3	EN 728
Melt mass-flow rate MFR for PE 63, PE 80 and PE 100	Change of MFR by processing ± 20 % [c]	Load Test temperature Time Number of test pieces [a]	5 kg 190 °C 10 min Shall conform to EN ISO 1133:1999	EN ISO 1133:1999, condition T

[a] The number of test pieces given indicate the quantity required to establish a value for the characteristic described in the table. The number of test pieces required for factory production control and process control should be listed in the manufacturer's quality plan for guidance see prCEN/TS 13244-7[4].

[b] Tests may be carried out as an indirect test at 210 °C providing there is clear correlation of the results to those at 200 °C, in cases of dispute the reference temperature shall be 200 °C.

[c] Value as measured on the valve relative to the value measured on the compound used.

9 Performance requirements

When valves conforming to this standard are assembled to each other or to other components conforming to EN 13244, the joints shall conform to the requirements of EN 13244-5.

10 Marking

10.1 General

All valves shall be permanently and legibly marked either by the use of a label, by printing or formed directly on the valve or on a plate, which is securely fixed to the valve.

The marking shall be such that it is legible without magnification.

10.2 Marking on valves

If the mark is imprinted on the valve the marking shall not initiate cracks or other types of failure and that normal storage, weathering, handling, installation and use shall not affect the legibility of the marking.

If printing is used, the colour of the printed information shall differ from the basic colour of the product.

The minimum required marking shall conform to Table 5.

NOTE Attention is drawn to the possible need to include CE marking when required for legislative purposes.

Table 5 — Minimum required marking on valves

Aspects required	Mark or symbol
Manufacturers name or trade mark	Name or code
Nominal diameter and pipe series/SDR	e.g. 110/S 5 or 110/SDR 11
Manufacturer's information	[a]
[a] In clear figures or in code providing traceability to production period within year and month and the production site if manufacturer is producing at different sites nationally and/or internationally.	

10.3 Marking on a label

Unless marked on the valve the information given in Table 6 shall be printed on a label, with one label per valve. The label shall be of sufficient quality to be intact and legible at the time of installation.

Table 6 — Minimum required marking on a label

Aspects	Marking or symbol
Manufacturers name or trade mark	Name or code
Standard number	EN 13244
Material and designation	e.g. PE 80
Pressure class in bars [a]	e.g. PN 12,5
[a] PN calculated with C = 1,25.	

11 Packaging

The valves shall be packaged in bulk or individually protected where necessary in order to prevent deterioration and contamination.

The packaging shall bear at least one label with the manufacturer's name, type and dimensions of the part, number of units and any special storage conditions.

NOTE It is recommended to protect the spigot end by external caps.

Bibliography

[1] EN 12201, *Plastics piping systems for water supply - Polyethylene (PE).*

[2] EN 1074-1, *Valves for water supply — Fitness for purpose requirements and appropriate verification tests — Part 1: General requirements.*

[3] EN 1074-2, *Valves for water supply — Fitness for purpose requirements and appropriate verification tests — Part 2: Isolating valves.*

[4] prCEN/TS 13244-7 , *Plastics piping systems for buried and above-ground pressure systems for water for general purposes, drainage and sewerage — Polyethylene (PE) — Part 7: Guidance for the assessment of conformity.*

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National annex NA (informative)
Additional information on the selection and installation of piping systems and components in the UK

The responsible UK committee gives the following advice concerning the selection and installation of piping systems and components conforming to this British Standard.

a) Water and water and sewerage undertakings and other entities deemed to be within the scope of the Public Procurement Directive (PPD) are obliged to use EN 13244-1, EN 13244-2, EN 13244-3, EN 13244-4 and EN 13244-5 produced under EC/U mandate, if they wish to purchase PE pipe systems or components within its scope.

b) Where there are options, care should be taken to ensure that agreement is established between suppliers and purchasers, e.g. in terms of colour, size, physical characteristics, effect on water quality and quality assurance.

c) The use of pipes and components manufactured in PE 63 materials is not established practice in the UK.

d) It has been UK practice to specify a test to guard against leakage or contamination as a result of biodegradation of elastomeric sealing rings or gaskets used in piping systems. This requirement is specifically excluded from the scope of BS EN 681-1. For manufacturers wishing to demonstrate resistance of such products to biodegradation, a test is contained in BS 7874.

National Bibliography

Standards publications

BS 7874:1998, *Method of test for microbiological deterioration of elastomeric seals for joints in pipework and pipelines*.

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

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