

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

Part 3: Fittings

The European Standard EN 13244-3:2002 has the status of a British Standard

ICS 23.040.45; 93.030

National foreword

This British Standard is the official English language version of EN 13244-3:2002. No existing British Standard will be superseded by implementation of this part of this European Standard.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.

NOTE 2 The UK water industry has indicated that following the publication of this British Standard, the following Water Industry Specifications will be declared obsolescent by March 2005 and retained for reference where applicable:
— WIS 4-32-14, *Specification for PE 80 and PE 100 electrofusion fittings for nominal sizes up to and including 630 mm¹⁾*;
— WIS 4-32-15, *Specification for PE 80 and PE 100 spigot fittings and drawn bends for nominal sizes up to and including 1 000 mm¹⁾*.

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 3 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*²⁾, a joint publication of WRc and BPF Plastic Pipes Group represents established UK practice.

NOTE 4 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⁾ Published by WRc, Swindon.
²⁾ 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

© BSI 11 December 2003

ISBN 0 580 43028 6

Amendments issued since publication

Amd. No.	Date	Comments

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 29 and a back cover.

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

English version

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

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 3: Raccords

Kunststoff-Rohrleitungssysteme für erd- und oberirdisch
verlegte Druckrohrleitungen für Brauchwasser,
Entwässerung und Abwasser - Polyethylen (PE) - Teil 3:
Formstücke

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
Foreword	4
Introduction	6
1 Scope	7
2 Normative references	8
3 Definitions, symbols and abbreviations	9
4 Material	9
4.1 PE compound	9
4.2 Material for non-polyethylene parts	10
4.2.1 General	10
4.2.2 Metal parts	10
4.2.3 Elastomers	10
4.2.4 Other materials	10
5 General characteristics	10
5.1 Appearance	10
5.2 Design	10
5.3 Colour	10
5.4 Electrical characteristics for electrofusion fittings	11
5.5 Appearance of factory made joints	11
6 Geometrical characteristics	11
6.1 Measurement of dimensions	11
6.2 Dimensions of electrofusion sockets	11
6.2.1 Diameters and lengths of electrofusion sockets	11
6.2.2 Wall thicknesses	13
6.3 Dimensions of spigotted fittings	13
6.4 Dimensions of socket fusion fittings	15
6.5 Socketed pipe	16
6.5.1 Dimensions and tolerances of the socket and length of spigot end	17
6.5.2 Equations for calculating the dimensions of sockets of non-end-load-resistant fittings for use with pipes up to 6 m lengths	17
6.6 Dimensions of mechanical fittings	17
6.7 Dimensions of loose backing flanges and flange adapters	17
7 Mechanical characteristics	17
7.1 General	17
7.2 Conditioning	17
7.3 Requirements	17
7.4 Retest in case of failure at 80 °C	18
7.5 Pressure drop	19
8 Physical characteristics	19
8.1 Conditioning	19
8.2 Requirements	19
9 Chemical characteristics of fittings in contact with chemicals	20
10 Sealing rings	20
11 Performance requirements	20
12 Marking	20
12.1 General	20

12.2	Minimum required marking of fittings	21
12.3	Minimum required marking on a label	21
12.4	Fusion system recognition	21
13	Packaging	22
Annex A (normative)	Socket fusion fittings	23
Annex B (informative)	Examples of typical terminal connection for electrofusion fittings	25
Bibliography		28

Foreword

This document (EN 13244-3:2002) 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 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 installation practices.

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 (this standard)*
- *Part 4: Valves*
- *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:

- Annex A (normative): Socket fusion fittings;
- Annex B (informative): Examples of typical terminal connection for electrofusion fittings;
- Bibliography.

System Standards for piping systems of other plastics materials used for the conveyance of water, drainage and sewerage 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 3, specifies the requirements for a piping system and its components when made from polyethylene (PE), 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 fittings, are specified in EN 13244-1, EN 13244-2 and EN 13244-4. 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 fittings.

1 Scope

This Part of EN 13244 specifies the characteristics of fittings 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.

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 fittings, their joints and to joints with components of PE and other materials intended to be used under the following conditions:

- 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 2 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 3 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.

These fittings can be of the following types:

- a) fusion fittings
 - 1) butt fusion fittings;
 - 2) socket fusion fittings;
 - 3) electrofusion fittings.
- b) mechanical fittings
 - 1) compression fittings.
- c) flanged fittings.

1) 1 bar = 10⁵ N/m².