BS EN 1555-2:2025

BSI Standards Publication

Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE)

Part 2: Pipes

bsi.

National foreword

This British Standard is the UK implementation of EN 1555-2:2025. It supersedes BS EN 1555-2:2021, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/88, Plastics piping systems.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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.

© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 31207 2

ICS 23.040.20; 91.140.40

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2025.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1555-2

October 2025

ICS 23.040.20

Supersedes EN 1555-2:2021

English Version

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes

Systèmes de canalisations en plastique pour la distribution de combustibles gazeux - Polyéthylène (PE) - Partie 2 : Tubes

Kunststoff-Rohrleitungssysteme für die Gasversorgung - Polyethylen (PE) - Teil 2: Rohre

This European Standard was approved by CEN on 11 August 2025.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2025 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 1555-2:2025 E

Contents

Page

European foreword

This document (EN 1555-2:2025) 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 April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1555-2:2021.

The main changes are as follows:

— reference to information related to the suitability of PE pipe systems for 100 % hydrogen and its admixtures with natural gas has been made;

— terms and definitions have been distributed over EN 1555-1, EN 1555-2 and EN 1555-3;

— subclause 5.1 about the compound for pipes has been restructured;

— the requirement for the compound used for identification stripes has been updated;

— the circumferential reversion has been moved to subclause 9.3;

— a conversion and normalisation step has been included to the requirement for the CRB;

— the performance requirements for joints have been mentioned more explicitly by adding Table 7;

— the mechanical characteristics of pipes with peelable layer have been updated;

— the requirement for the squeeze-off has been adjusted.

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 general standards on functional requirements and on recommended practice for installation.

EN 1555 consists of the following parts:

— EN 1555-1, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*;

— EN 1555-2, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes* (this document);

— EN 1555-3, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*;

— EN 1555-4, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 4: Valves*;

— EN 1555-5, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system*;

In addition, the following document provides guidance on the assessment of conformity:

— CEN/TS 1555-7, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 7: Guidance for assessment of conformity*.

NOTE EN 12007-2 prepared by CEN/TC 234 "Gas infrastructure" deals with the recommended practice for installation of plastics pipes system in accordance with EN 1555 (all parts).

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

The EN 1555 series specifies the requirements for a piping system and its components made from polyethylene (PE) compounds, which is intended to be used for the supply of gaseous fuels.

This document covers the characteristics of pipes.

Requirements and test methods for materials and components, other than pipes, are specified in EN 1555-1, EN 1555-3 and EN 1555-4.

Characteristics for fitness for purpose of the system are covered in EN 1555-5. CEN/TS 1555-7 gives guidance for assessment of conformity.

Recommended practice for design, handling and installation is given in EN 12007-2.

1 Scope

This document specifies the characteristics of pipes made from polyethylene (PE) for piping systems in the field of the supply of gaseous fuels.

NOTE 1 Additional information related to the installation of PE 100-RC systems is given in EN 1555-1:2025, Annex A.

NOTE 2 Additional information about the suitability of PE pipe systems for hydrogen and its admixtures is given in EN 1555-1:2025, Annex B.

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

In conjunction with EN 1555-1, EN 1555-3, EN 1555-4 and EN 1555-5, this document is applicable to PE pipes, fittings and valves, their joints, and joints with components of PE and other materials intended to be used under the following conditions:

a) a maximum operating pressure, MOP, up to and including 10 bar[1] at a design reference temperature of 20 °C;

b) an operating temperature between −20 °C and 40 °C.

For operating temperatures between 20 °C and 40 °C derating coefficients are specified in EN 1555-5.

The EN 1555 series covers a range of MOPs and gives requirements concerning colours.

This document is applicable to three types of pipe:

— PE pipes (outside diameter, d_n) including any identification stripes;

— PE pipes with co-extruded layers on either or both the outside and/or inside of the pipe (total outside diameter, d_n) as specified in Annex A, where all PE layers have the same MRS rating;

— PE pipes (outside diameter, d_n) with a peelable and contiguous thermoplastics additional layer on the outside of the pipe ("coated pipe") as specified in Annex B.

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.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 1555-1:2025, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*

EN 1555-5, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method (ISO 1133-1)*

[1] bar = 0,1 MPa. = 10^5 Pa; 1 MPa = 1 N/mm^2.

EN ISO 1167-1:2006, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method (ISO 1167-1:2006)*

EN ISO 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces (ISO 1167-2)*

EN ISO 2505, *Thermoplastics pipes — Longitudinal reversion — Test method and parameters (ISO 2505)*

EN ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions (ISO 3126)*

EN ISO 6259-1, *Thermoplastics pipes — Determination of tensile properties — Part 1: General test method (ISO 6259-1)*

EN ISO 6259-3, *Thermoplastics pipes — Determination of tensile properties — Part 3: Polyolefin pipes (ISO 6259-3)*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969)*

EN ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6)*

EN ISO 13477, *Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Small-scale steady-state test (S4 test) (ISO 13477)*

EN ISO 13478, *Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Full-scale test (FST) (ISO 13478)*

EN ISO 13479:2022, *Polyolefin pipes for the conveyance of fluids — Determination of resistance to crack propagation — Test method for slow crack growth on notched pipes (ISO 13479:2022)*

EN ISO 13968, *Plastics piping and ducting systems — Thermoplastics pipes — Determination of ring flexibility (ISO 13968)*

ISO 11922-1:2018, *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Part 1: Metric series*

ISO 18488, *Polyethylene (PE) materials for piping systems — Determination of Strain Hardening Modulus in relation to slow crack growth — Test method*

ISO 18489:2015, *Polyethylene (PE) materials for piping systems — Determination of resistance to slow crack growth under cyclic loading — Cracked Round Bar test method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1555-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to geometry

3.1.1
nominal size
DN/OD
numerical designation of the size of a component related to the outside diameter

Note 1 to entry: It is a convenient round number approximately equal to the manufacturing dimension in millimetres (mm). It is not applicable to components designated by thread size.

3.1.2
nominal outside diameter
d_n
specified outside diameter assigned to a *nominal size* (3.1.1)

Note 1 to entry: It is expressed in millimetres (mm).

3.1.3
mean outside diameter
d_{em}
value of the measurement of the outer circumference of the pipe or spigot end of a fitting in any cross-section divided by π (= 3,142), rounded to the next greater 0,1 mm

3.1.4
minimum mean outside diameter
$d_{em,min}$
minimum value for the *mean outside diameter* (3.1.3) as specified for a given *nominal size* (3.1.1)

3.1.5
maximum mean outside diameter
$d_{em,max}$
maximum value for the *mean outside diameter* (3.1.3) as specified for a given *nominal size* (3.1.1)

3.1.6
out-of-roundness
ovality
difference between the measured maximum and the measured minimum outside diameter in the same cross section of a component

3.1.7
nominal wall thickness
e_n
numerical designation of the wall thickness of a component, which is a convenient round number, approximately equal to the manufacturing dimension in millimetres (mm)

Note 1 to entry: For thermoplastics components conforming to the EN 1555 series, the value of the nominal wall thickness, e_n, is identical to the specified *minimum wall thickness at any point* (3.1.9), e_{min}.

3.1.8
wall thickness at any point
e
wall thickness at any point around the circumference of a component rounded to the next greater 0,1 mm

Note 1 to entry: The symbol for the wall thickness of a fitting and valve body at any point is E.

3.1.9
minimum wall thickness at any point
e_{min}
minimum value for the *wall thickness at any point* (3.1.8) around the circumference of a component

3.1.10
tolerance
permitted variation of the specified value of a quantity, expressed as the difference between the permitted maximum and the permitted minimum values

3.1.11
wall thickness tolerance
T_y
permitted difference between the *wall thickness at any point* (3.1.8) and the *nominal wall thickness* (3.1.7)

Note 1 to entry: $e_n \leq e \leq e_n + T_y$

3.1.12
standard dimension ratio
SDR
numerical designation of a *pipe series* (3.1.13), which is a convenient round number, approximately equal to the dimension ratio of the *nominal outside diameter* (3.1.2) and the *nominal wall thickness* (3.1.7)

3.1.13
pipe series
S
number for pipe designation

Note 1 to entry: The relationship between the pipe series, *S*, and the *standard dimension ratio*, SDR (3.1.12) is given by the following formula as specified in ISO 4065 [8]:

$$S = \frac{SDR - 1}{2}$$

3.2 Terms related to material

3.2.1
compound
clearly defined homogenous extruded mixture of *base polymer* (3.2.5) (polyethylene) and additives (i.e. anti-oxidants, pigments, carbon black, UV-stabilizers and others) at a dosage level necessary for the processing and use of components

3.2.2
virgin material
plastics material in the form of pellets or granules that has not been subjected to use or processing other than that required for its initial manufacture

Note 1 to entry: Does not contain any reworked plastics material and/or plastics recyclate.

[SOURCE: EN 14541-1:2022, 3.1, modified – powder, floc, etc. removed, Note 2 to entry removed and Note 3 to entry removed]

3.2.3
reworked material
plastics material from rejected unused products or trimmings capable of being reclaimed within the same process that generated it

Note 1 to entry: Restrictions for use of reworked material for pipes are specified in EN 1555-2, fittings in EN 1555-3 and for valves in EN 1555-4.

Note 2 to entry: Previously referred to as "own reprocessed material".

[SOURCE: EN 14541-1:2022, 3.2 –Note 1 to entry removed, Note 2 to entry changed]

3.2.4
recyclate
plastics material resulting from the recycling of pre-consumer and post-consumer plastics products

Note 1 to entry: Also referred to as "secondary raw material" or "recycled plastics" or "regenerate".

Note 2 to entry: Recycling can be chemical, physical or mechanical.

[SOURCE: EN 14541-1:2022, 3.5]

3.2.5
base polymer
polymer produced by the material supplier for the manufacture of the *compound* (3.2.1)

3.3 Terms related to joints

3.3.1
squeeze-off
restriction of the gas flow to an acceptable rate through mechanical compression of the pipe

Note 1 to entry: See Annex C.

4 Symbols and abbreviated terms

4.1 Symbols

For the purpose of this document, the following symbols apply.

C	design coefficient
d_{em}	mean outside diameter
$d_{em,max}$	maximum mean outside diameter
$d_{em,min}$	minimum mean outside diameter
d_n	nominal outside diameter
e	wall thickness (at any point) around the circumference of a component
e_{min}	minimum wall thickness (at any point)
e_n	nominal wall thickness

$<G_p>$	strain hardening modulus
p_c	critical pressure
$p_{c,full\text{-}scale}$	critical pressure obtained in full-scale test
p_{cS4}	critical pressure obtained in S4-test
S	pipe series
T_y	wall thickness tolerance
t	time
θ	temperature
σ_{LPL}	lower confidence limit of the predicted hydrostatic strength

4.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

ANPT	accelerated notched pipe test
CRB	cracked round bar (test)
DN/OD	nominal size, outside diameter-related
LPL	lower predicted limit
MFR	melt mass-flow rate
MOP	maximum operating pressure
MRS	minimum required strength
NPT	notched pipe test
PE	polyethylene
RC	raised crack resistance
RCP	rapid crack propagation
SCG	slow crack growth
SDR	standard dimension ratio
SHT	strain hardening test

5 Material

5.1 Compound for pipes

The PE compound from which the pipes are made shall conform to EN 1555-1.

The pipes shall be made from:

— virgin material, or

— reworked material from the extrusion process from the same PE compound from any of the manufacturer's own plants, or

— reworked material from the injection moulding process from the same PE compound from any of the manufacturer's own plants, or

— a mixture of two or more of the above, all from the same PE compound.

Reworked material may be used from:

— the base pipe of peelable layer pipe (coated pipe), and

— pipes with or without identification stripes.

For co-extruded pipes, see Annex A.

Reworked material from co-extruded pipes or from pipes reworked with the peelable layer attached shall not be used.

A pipe can only be designated as an PE 100-RC pipe if it is produced from PE 100-RC materials, which fulfil the requirements of EN 1555-1:2025, Table 1 and Table 2, and is declared as PE 100-RC by the raw material manufacturer, and fulfils the requirements of Table 3 and Table 5 of this document for PE 100-RC. A co-extruded pipe made of a combination of PE 100 and PE 100-RC layers shall be regarded as PE 100 and marked accordingly.

5.2 Compound for identification stripes

The stripe compound (see 6.2) shall be manufactured from a PE base polymer in accordance with EN 1555-1, which is used for a pipe compound for which fusion compatibility has been proven.

The compound used for identification stripes in the form of a pipe shall conform to the decohesion test requirement of resistance to weathering as described in EN 1555-1:2025, Table 2.

The OIT of the stripe compound shall be ≥ 20 min at 210 °C, measured by the compound supplier in accordance with EN ISO 11357-6 (table footnote [b] of Table 6 applies).

5.3 External reworked material and recyclate

Reworked material obtained from external sources, and recyclate (pre-consumer and post-consumer material) shall not be used.

6 General characteristics

6.1 Appearance

When viewed without magnification, the internal and external surfaces of pipes shall be smooth and clean, and shall have no scoring, cavities and other surface defects to an extent that would prevent conformity to this document.

The ends of the pipe shall be cut cleanly and square to the axis of the pipe.

6.2 Colour

Pipes shall be black (PE 80, PE 100 and PE 100-RC), yellow (PE 80) or orange (PE 100 and PE 100-RC). In addition, black PE 80 pipes may be identified by yellow stripes and black PE 100 and PE 100-RC pipes may be identified by yellow or orange stripes, according to national preference.

The outer co-extruded layer of co-extruded pipes (see Annex A) or the outer peelable layer of peelable-layer pipes (see Annex B) shall be either black, yellow or orange. In addition, identification stripes may be used according to national preference.

National preference for colour can be stated in the National Foreword.

7 Geometrical characteristics

7.1 Measurement of dimensions

The dimensions of the pipe shall be measured in accordance with EN ISO 3126, and rounded to the next 0,1 mm. In case of dispute, the measurements of dimensions shall be made directly after conditioning for at least 4 h at (23 ± 2) °C and at least 24 h after manufacture.

Indirect measurement at the stage of production is allowed at shorter time periods, provided that evidence is shown of correlation.

7.2 Mean outside diameters, out-of-roundness (ovality) and tolerances

The mean outside diameters of the pipe, d_{em}, shall conform to Table 1.

For straight pipes, the maximum out-of-roundness shall conform to Table 1. For coiled pipes, the maximum out-of-roundness shall be specified by agreement between the manufacturer and the end-user.

Care should be taken that packaging and storage does not lead to an increased out-of-roundness and flattening of the pipe.

Table 1 — Mean outside diameters and out-of-roundness

Dimensions in millimetres

Nominal size DN/OD	Nominal outside diameter d_n	Mean outside diameter		Maximum out-of-roundness for straight pipes [b]
		$d_{em,min}$	$d_{em,max}$ [a]	
16	16	16,0	16,3	1,2
20	20	20,0	20,3	1,2
25	25	25,0	25,3	1,2
32	32	32,0	32,3	1,3
40	40	40,0	40,4	1,4
50	50	50,0	50,4	1,4
63	63	63,0	63,4	1,5
75	75	75,0	75,5	1,6
90	90	90,0	90,6	1,8
110	110	110,0	110,7	2,2
125	125	125,0	125,8	2,5
140	140	140,0	140,9	2,8
160	160	160,0	161,0	3,2
180	180	180,0	181,1	3,6
200	200	200,0	201,2	4,0
225	225	225,0	226,4	4,5
250	250	250,0	251,5	5,0
280	280	280,0	281,7	9,8

Nominal size DN/OD	Nominal outside diameter d_n	Mean outside diameter		Maximum out-of-roundness for straight pipes [b]
		$d_{em,min}$	$d_{em,max}$ [a]	
315	315	315,0	316,9	11,1
355	355	355,0	357,2	12,5
400	400	400,0	402,4	14,0
450	450	450,0	452,7	15,6
500	500	500,0	503,0	17,5
560	560	560,0	563,4	19,6
630	630	630,0	633,8	22,1
710	710	710,0	716,4	24,9
800	800	800,0	807,2	28,0

[a] In accordance with ISO 11922-1:2018, except for d_n 50. Grade B for sizes ≤ 630, except for d_n 40. Grade A for sizes ≥ 710, and for d_n 40.

[b] Measurement of out-of-roundness shall be made at the point of manufacturing.

7.3 Wall thicknesses and related tolerances

7.3.1 Minimum wall thicknesses

The use of any standard dimension ratio (SDR) derived from the pipe series, *S*, in accordance with ISO 4065 [8] is permitted.

The minimum wall thickness, e_{min}, of pipes with SDR 17 and SDR 11 shall conform to Table 2.

Table 2 — Minimum wall thicknesses for pipes of SDR 17 and SDR 11

Dimensions in millimetres

Nominal outside diameter d_n	Minimum wall thickness [a] e_{min} [b]	
	SDR 11	SDR 17
16	3,0 [c]	2,3 [c]
20	3,0 [c]	2,3 [c]
25	3,0 [c]	2,3 [c]
32	3,0 [c]	2,3 [c]
40	3,7	2,4
50	4,6	3,0
63	5,8	3,8
75	6,8	4,5
90	8,2	5,4
110	10,0	6,6
125	11,4	7,4
140	12,7	8,3
160	14,6	9,5
180	16,4	10,7
200	18,2	11,9
225	20,5	13,4
250	22,7	14,8
280	25,4	16,6
315	28,6	18,7
355	32,2	21,1
400	36,3	23,7
450	40,9	26,7
500	45,4	29,7
560	50,8	33,2
630	57,2	37,4
710	64,5	42,1
800	72,6	47,4

[a] In some countries, the SDR 17,6 series is still specified.

[b] $e_{min} = e_n$

[c] The calculated value of e_{min} is rounded up to 2,3 mm for SDR 17 and 3,0 mm for SDR 11.

7.3.2 Tolerance on the wall thicknesses

The tolerance on the wall thickness at any point shall conform to Table 3, which is derived from ISO 11922-1:2018, grade V.

Table 3 — Tolerances on wall thicknesses

Dimensions in millimetres

Nominal wall thickness e_n [a]		Plus tolerance	Nominal wall thickness e_n [a]		Plus tolerance
>	≤	T_y [b]	>	≤	T_y [b]
—	2,0	0,3	41,0	42,0	4,3
2,0	3,0	0,4	42,0	43,0	4,4
3,0	4,0	0,5	43,0	44,0	4,5
4,0	5,0	0,6	44,0	45,0	4,6
5,0	6,0	0,7	45,0	46,0	4,7
6,0	7,0	0,8	46,0	47,0	4,8
7,0	8,0	0,9	47,0	48,0	4,9
8,0	9,0	1,0	48,0	49,0	5,0
9,0	10,0	1,1	49,0	50,0	5,1
10,0	11,0	1,2	50,0	51,0	5,2
11,0	12,0	1,3	51,0	52,0	5,3
12,0	13,0	1,4	52,0	53,0	5,4
13,0	14,0	1,5	53,0	54,0	5,5
14,0	15,0	1,6	54,0	55,0	5,6
15,0	16,0	1,7	55,0	56,0	5,7
16,0	17,0	1,8	56,0	57,0	5,8
17,0	18,0	1,9	57,0	58,0	5,9
18,0	19,0	2,0	58,0	59,0	6,0
19,0	20,0	2,1	59,0	60,0	6,1
20,0	21,0	2,2	60,0	61,0	6,2

Nominal wall thickness e_n [a]		Plus tolerance	Nominal wall thickness e_n [a]		Plus tolerance
>	≤	T_y [b]	>	≤	T_y [b]
21,0	22,0	2,3	61,0	62,0	6,3
22,0	23,0	2,4	62,0	63,0	6,4
23,0	24,0	2,5	63,0	64,0	6,5
24,0	25,0	2,6	64,0	65,0	6,6
25,0	26,0	2,7	65,0	66,0	6,7
26,0	27,0	2,8	66,0	67,0	6,8
27,0	28,0	2,9	67,0	68,0	6,9
28,0	29,0	3,0	68,0	69,0	7,0
29,0	30,0	3,1	69,0	70,0	7,1
30,0	31,0	3,2	70,0	71,0	7,2
31,0	32,0	3,3	71,0	72,0	7,3
32,0	33,0	3,4	72,0	73,0	7,4
33,0	34,0	3,5	73,0	74,0	7,5
34,0	35,0	3,6			
35,0	36,0	3,7			
36,0	37,0	3,8			
37,0	38,0	3,9			
38,0	39,0	4,0			
39,0	40,0	4,1			
40,0	41,0	4,2			

[a] $e_{min} = e_n$.

[b] The tolerance is expressed in the form $^{+T_y}_{-0}$ mm.

7.4 Coiled pipe

During production the pipe shall be coiled such that localized deformation (e.g. buckling and kinking) is prevented.

The internal diameter of the coil shall not be less than 18 d_n.

7.5 Lengths

The length of pipes is to be supplied by agreement between the purchaser and the manufacturer.

8 Mechanical 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 as specified in Table 4 using the indicated parameters, the pipe shall have mechanical characteristics conforming to the requirements given in Table 4. The requirements for co-extruded pipe given in Annex A and for peelable pipe given in Annex B shall be satisfied. If requested by the end user, a pipe that will be subject to squeeze-off shall be tested in accordance with Annex C.

Table 4 — Mechanical characteristics

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Hydrostatic strength (20 °C, 100 h) [o]	No failure during the test period of any test piece	End caps	Type A [a] of EN ISO 1167-1:2006	EN ISO 1167-1:2006 and EN ISO 1167-2
		Orientation	Free	
		Conditioning time at test temperature	Shall conform to EN ISO 1167-1:2006	
		Number of test pieces [b]	3	
		Type of test	Water internal and water external to the test piece ("water-in-water") [p]	
		Circumferential (hoop) stress for: PE 80 PE 100 and PE 100-RC	 10,0 MPa 12,0 MPa	
		Test period	≥ 100 h	
		Test temperature	20 °C	

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Hydrostatic strength (80 °C, 165 h) [o]	No failure during the test period of any test piece	End caps	Type A [a] of EN ISO 1167-1:2006	EN ISO 1167-1:2006 and EN ISO 1167-2
		Orientation	Free	
		Conditioning time at test temperature	Shall conform to EN ISO 1167-1:2006	
		Number of test pieces [b]	3	
		Type of test	Water internal and water external to the test piece ("water-in-water") [p]	
		Circumferential (hoop) stress for: PE 80 PE 100 and PE 100-RC	 4,5 MPa 5,4 MPa	
		Test period	≥ 165 h [c]	
		Test temperature	80 °C	
Hydrostatic strength (80 °C, 1 000 h) [o]	No failure during the test period of any test piece	End caps	Type A [a] of EN ISO 1167-1:2006	EN ISO 1167-1:2006 and EN ISO 1167-2
		Orientation	Free	
		Conditioning time at test temperature	Shall conform to EN ISO 1167-1:2006	
		Number of test pieces [b]	3	
		Type of test	Water internal and water external to the test piece ("water-in-water") [p]	
		Circumferential (hoop) stress for: PE 80 PE 100 and PE 100-RC	 4,0 MPa 5,0 MPa	
		Test period	≥ 1 000 h	
		Test temperature	80 °C	
Elongation at break	≥ 350 % [d] [e]	Thickness	$e \leq 5$ mm	EN ISO 6259-1 and EN ISO 6259-3
		Test piece shape	Type 2	
		Speed of test	100 mm/min	
		Number of test pieces [b]	Shall conform to EN ISO 6259-1	

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Elongation at break	≥ 350 % d e	Thickness	5 mm < e ≤ 12 mm	EN ISO 6259-1 and EN ISO 6259-3
		Test piece shape	Type 1 f	
		Speed of test	50 mm/min	
		Number of test pieces b	Shall conform to EN ISO 6259-1	
Elongation at break	≥ 350 % d e	Thickness	e > 12 mm	EN ISO 6259-1 and EN ISO 6259-3
		Test piece shape	Type 1 f	
		Speed of test	25 mm/min	
		Number of test pieces b	Shall conform to EN ISO 6259-1	
		Or		
		Test piece shape	Type 3 f	
		Speed of test	10 mm/min	
		Number of test pieces b	Shall conform to EN ISO 6259-1	
Resistance to SCG for PE 80 and PE 100 Notched pipe test (NPT) q	No failure during the test period	Thickness	e > 5 mm	ISO 13479
		Test temperature	80 °C	
		Internal test pressure for: PE 80, SDR 11 PE 100, SDR 11	 8,0 bar g 9,2 bar g	
		Test period	≥ 500 h	
		Type of test	Water internal and water external to the test piece ("water-in-water")	
		Number of test pieces b	Shall conform to ISO 13479	

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Resistance to SCG for PE 100-RC Accelerated notched pipe test (ANPT) [h]	No failure during the test period	Pipe dimension	d_n: 110 mm SDR 11	ISO 13479
		Test temperature	80 °C	
		Internal test pressure for: PE 100-RC, SDR 11	9,2 bar	
		Test period	≥ 300 h [j]	
		Type of test	Water internal and detergent solution external to the test piece [k] ("water-in-liquid")	
		Number of test pieces [b]	Shall conform to ISO 13479	
Resistance to SCG for PE 100-RC Strain-hardening test (SHT) [h]	$<G_p> \geq 50,0$ MPa	Test sample	Compression moulded sheet made from regrind from pipe [i]	ISO 18488
		Test temperature	80 °C	
		Thickness	300 µm	
		Test speed	Shall conform to ISO 18488	
		Number of test pieces [b]	Shall conform to ISO 18488	
Resistance to SCG for PE 100-RC Cracked round bar (CRB) test [h]	≥ $1,5 \times 10^6$ cycles at an interpolated stress range ($\Delta\sigma_0$) of 12,5 MPa and converted and normalised to a diameter of 14 mm and an initial crack length of 1,40 mm [s]	Test sample	Machined from pipe [r]	ISO 18489
		Pipe wall thickness	$e > 16$ mm	
		Test temperature	23 °C	
		Type of test	In air	
		Diameter of test piece	14 mm	
		Reference stress range	12,5 MPa	
		Target initial crack length a_{ini}*	1,50 mm	
		Waveform/frequency	Sinusoid/10 Hz	
		Number of test pieces [l]	Shall conform to ISO 18489	
Resistance to rapid crack propagation (RCP) Critical pressure, p_c [m]	$p_c \geq 1,5$ MOP with $p_c = 3,6\ p_{cS4} + 2,6$ [n]	Test temperature	0 °C	EN ISO 13477
		Pressurizing fluid	air	
		Number of test pieces [b]	Shall conform to EN ISO 13477	

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	

NOTE 1 Chemical Abstracts Service (CAS) Registry Number® is a trademark of the American Chemical Society (ACS). This information is given for the convenience of users of this document and does not constitute an endorsement by CEN of the product named. Equivalent products can be used if they can be shown to lead to the same results.

NOTE 2 Arkopal® N100 is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by CEN of this product.

NOTE 3 Dehyton® PL is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by CEN of this product.

[a] Type B end caps may be used for batch release tests for diameters ≥ 500 mm.

[b] The number of test pieces given indicates the number required to establish a value for the characteristic described in this table. The number of test pieces required for batch release testing and product verification testing should be listed in the manufacturer's quality plan. Guidance on assessment of conformity can be found in CEN/TS 1555-7.

[c] Only brittle failures shall be taken into account. If a ductile failure occurs before 165 h, the test may be repeated at a lower stress. The stress and the associated test period shall be selected from Table 5 or from a line based on the stress/time points given in Table 5.

[d] Where the rupture takes place outside the gauge marks, the test is accepted if the value conforms to the requirements.

[e] The test can be terminated when the requirement is met, without necessarily carrying out the test up to the rupture of the test piece.

[f] Where practical, machine or die cut type 2 test pieces may be used for pipe wall thickness equal to or less than 25 mm.

[g] For other SDR classes values are given in ISO 13479:2022, Annex B.

[h] These tests are specifically for PE 100-RC materials. The SHT is intended to be used for size group 1, the ANPT for size group 2, and the CRB test for size group 3 or 4 (see CEN/TS 1555-7). Because nonylphenol ethoxylate is currently unavailable in certain markets, the SHT may be used for size group 2 as alternative test until a requirement using a new detergent for ANPT has been defined.

[i] The sample for the SHT shall be taken across the pipe wall or the whole pipe in case of small diameter. The outer surface shall be scraped to remove any contamination present.

[j] This requirement correlates to a test on 110 mm SDR 11 PE 100-RC pipe in accordance with ISO 13479, at a pressure level of 9,2 bar at 80 °C, water-in-water, with no failure in a test period of 8 760 h [13], which can be used as alternative. The ANPT test has been developed based on testing 110 mm SDR 11 pipe (see ISO 13479:2022, Annex D) [14][15]. Research is ongoing to define requirements for other pipe diameters and SDR ratios in this test.

[k] Nonylphenol ethoxylate (CAS Registry Number® 9016–45–9) with a trade name of Arkopal® N100 is used for this test with a concentration for testing of 2 % (mass fraction) aqueous solution. This detergent will be replaced by lauramine oxide CAS Registry Number® 308062–28–4), which is commercially available as Dehyton® PL. The requirement for the ANPT using lauramine oxide is under development at the time of publication of this document.

[l] At least four samples shall be machined axially and evenly distributed around the circumference of the pipe.

[m] Rapid crack propagation testing is only required when the wall thickness of the pipe is greater than the wall thickness of the pipe used in the rapid crack propagation PE compound test (see EN 1555-1:2025, Table 2). Rapid crack propagation testing is required at sub-zero temperatures for applications at such temperatures.

[n] If the requirement is not met or S4 test equipment not available, then (re)testing by using the full-scale test shall be performed in accordance with EN ISO 13478. In this case: $p_c = p_{c,full\ scale}$.

[o] Test pressure shall be calculated using the measured pipe dimensions. However, for BRT testing nominal dimensions may be used. In case of dispute, measured dimensions shall be used.

[p] For pipes ≥ 630 mm diameter the test may be carried out water-in-air.

[q] This test is not performed on PE 100-RC pipes.

[r] The sample for the CRB test shall be taken as close as possible to the inner wall needed for sample preparation and axially along the pipe.

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
[s] For interpolation, CRB test stress levels should be chosen between 11,5 MPa and 13,5 MPa. Test stress levels of 11,5 MPa, 12,2 MPa, 12,8 MPa and 13,5 MPa are recommended. After the test the stress range is to be converted and normalised to a diameter of 14 mm and an initial crack length of 1,4 mm, in accordance with ISO 18489:2015, Annex A.				

Table 5 — Test parameters for the retest of the hydrostatic strength at 80 °C

PE 80		PE 100 and PE 100-RC	
Stress MPa	Minimum test period h	Stress MPa	Minimum test period h
4,5	165	5,4	165
4,4	233	5,3	256
4,3	331	5,2	399
4,2	474	5,1	629
4,1	685	5,0	1 000
4,0	1 000	—	—

9 Physical characteristics

9.1 Conditioning

Conditioning of the test pieces for MFR and OIT as specified in Table 6 is not applicable.

9.2 Requirements

When tested in accordance with the test methods as specified in Table 6 using the indicated parameters, the pipe shall have physical characteristics conforming to the requirements given in Table 6.

Table 6 — Physical characteristics

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Oxidation induction time (OIT) (thermal stability)	≥ 10 min	Test temperature	210 °C [b]	EN ISO 11357-6
		Test atmosphere	Oxygen	
		Specimen mass	(15 ± 2) mg	
		Number of test pieces [a] [c]	4	

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Melt mass-flow rate (MFR)	After processing maximum deviation of ± 20 % of the value measured on the batch used to manufacture the pipe [d]	Loading mass	5 kg	EN ISO 1133-1
		Test temperature	190 °C	
		Time	10 min	
		Number of test pieces [a]	Shall conform to EN ISO 1133-1	
Longitudinal reversion (For pipes ≤ 16 mm wall thickness)	≤ 3,0 % original appearance of the pipe shall remain	Test temperature	110 °C	EN ISO 2505
		Length of test piece	200 mm	
		Immersion time	Shall conform to EN ISO 2505	
		Test method	Free	
		Number of test pieces [a]	Shall conform to EN ISO 2505	
Carbon black dispersion [e]	Grade ≤ 3 Rating of appearance A1, A2, A3 or B	Preparation of test pieces	Free [f]	ISO 18553
		Number of test pieces [a]	Shall conform to ISO 18553	
Pigment dispersion [g]	Grade ≤ 3 Rating of appearance A1, A2, A3 or B	Preparation of test pieces	Free [f]	ISO 18553
		Number of test pieces [a]	Shall conform to ISO 18553	

[a] The number of test pieces given indicates the number required to establish a value for the characteristic described in this table. The number of test pieces required for batch release testing and product verification testing should be listed in the manufacturer's quality plan. Guidance on assessment of conformity can be found in CEN/TS 1555-7.

[b] Alternatively the test may be carried out at 200 °C with a minimum requirement of ≥ 20 min. In case of dispute, testing at 210 °C is applicable. The sample thickness is free and not in accordance with EN ISO 11357-6.

[c] Two samples shall be taken from the outer and inner pipe surfaces.

[d] The value given by the material supplier can be used, but in case of dispute the measurement on granules shall be carried out by the pipe manufacturer.

[e] Only for black products.

[f] In case of dispute, the test pieces shall be prepared by the microtome method.

[g] Only for non-black products.

9.3 Circumferential reversion of pipes with $d_n \geq 250$ mm

The circumferential reversion of pipes with $d_n \geq 250$ mm shall be determined at least 48 h after manufacture.

The pipe test pieces shall be 3 d_n in length.

The pipe shall be conditioned in water at 80 °C in accordance with EN ISO 1167-1.

With the test piece at (23 ± 2) °C, circumferential measurement shall be made to establish d_{em} made at distance of 0,1 d_n and 1,0 d_n, respectively, from one end of the test piece.

The difference between these d_{em} measurements shall not be greater than the d_{em} tolerance range specified in Table 1.

10 Performance requirements

When pipes conforming to this document are assembled to each other or to components conforming to other parts of the EN 1555 series, the joints shall conform to EN 1555-5, see Table 7.

Table 7 — Fitness for purpose

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Hydrostatic strength (80 °C, 165 h)	EN 1555-5	Under normal conditions	-	EN 1555-5
Tensile strength for butt fusion	EN 1555-5	Under normal conditions	-	EN 1555-5
		Under extreme conditions	-	

11 Marking

11.1 General

The marking elements shall be printed or formed directly on the pipe in such a way that after storage, weathering, handling and installation legibility is maintained during the use of the pipe.

NOTE The manufacturer is not responsible for marking being illegible, due to actions caused during installation and use such as abrasion, painting, scratching, covering of the components or by use of detergents etc. on the components unless agreed or specified by the manufacturer.

Marking shall not initiate cracks or other types of defects, which adversely influence the performance of the pipe.

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

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

In case of pipe made from own reworked material, the use of appropriate marking can be subject to agreement between the manufacturer and the end-user.

11.2 Minimum required marking

The marking of an EN standard reference on a component requires conformance with all mandatory requirements of the standard, and that the component comes within the scope of standard.

The minimum required marking shall conform to Table 8.

Table 8 — Minimum required marking

Aspects	Mark or symbol
Reference to the EN 1555 series Manufacturer's name and/or trademark	EN 1555 Name or symbol
For pipes $d_n \leq 32$ mm: — Nominal outside diameter × nominal wall thickness ($d_n \times e_n$)	 e.g. 32 × 3,0
For pipes $d_n > 32$ mm: — Nominal outside diameter, d_n — SDR	 e.g. 200 e.g. SDR 11
Type of pipe, if applicable Designation Manufacturer's information [a] Intended use [b]	e.g. co-extruded or peelable layer e.g. PE 100, PE 100-RC GAS
NOTE ISO 12176-4 [9] and ISO 12176-5 [10] provide coded information about traceability. [a] For providing traceability, the following details shall be given: — the production period, year and month, in figures or in code; — name or code for the production site, if the manufacturer is producing in different sites; — materials used by name or code. [b] Information on abbreviated terms can be found in CEN/TR 15438 and/or in national rules.	

The frequency of the marking shall not be less than once per metre.

The length of coiled pipe is permitted to be indicated on the coil. The remaining length of pipe on drums is permitted to be indicated on the pipe.

Co-extruded and peelable pipes shall be marked accordingly including any specific instructions related to these types of pipes.

11.3 Additional marking

Pipes conforming to this document, which are third-party certified, may be marked accordingly.

Annex A
(normative)

Pipes with co-extruded layers

A.1 General

This annex specifies the additional geometrical, mechanical and physical properties of PE pipes with co-extruded layer(s), intended to be used for the supply of gaseous fuels. Additional marking requirements are given. The outside diameter, d_e, is specified as the total outside diameter, including the co-extruded black or coloured layer(s) at the outside of the pipe (see 6.2). The wall thickness, e_n is defined as the total wall thickness including all layers, on either or both the outside and/or inside of the pipe.

NOTE Other types of layered pipes are covered by other International Standards, e.g. ISO 17484-1 [11] or ISO 18225 [12].

A.2 Material

The PE compounds used for the layer(s) of the pipe shall be in accordance with EN 1555-1 and shall be of the same MRS rating (see EN 1555-1:2025, Table 3). Reworked material from co-extruded pipes shall not be used for components in accordance with the EN 1555 series.

A.3 Geometrical characteristics

The geometrical characteristics of the pipe, inclusive of the co-extruded layer(s), shall be in accordance with Clause 7. The manufacturer shall declare the thickness of each layer and tolerance in the technical file.

A.4 Mechanical characteristics

The mechanical characteristics of the pipe, inclusive of the co-extruded layer(s), shall be in accordance with Clause 8.

In addition, the requirements for RCP and slow crack growth resistance in accordance with Table 4 shall be fulfilled by the manufactured pipe, and the first sentence of footnote [m] does not apply. The RCP test is to be performed on the maximum wall thickness of the manufacturer's range.

For pipe with all PE 100-RC layers, the SHT shall be performed on a sample made from compression moulded sheets taken from regrind of each of the layer. When layer thickness is less than 1,0 mm the test may be carried out on a mixture of this and the adjacent layer.

A.5 Physical characteristics

The physical characteristics shall be in accordance with Clause 9. The requirements for thermal stability and for melt mass-flow rate shall apply to the individual layers. Heat reversion shall be applicable to the pipe, inclusive of the co-extruded layer(s).

A.6 Marking

The marking of pipes with co-extruded layer(s) shall be in accordance with Clause 11.

A.7 Delamination

No delamination shall occur during all tests of the co-extruded pipe.

A.8 Integrity of the structure

When tested in accordance with the test methods as specified in Table A.1, using the indicated parameters, the pipe shall have the structural performance conforming to the requirements given in Table A.1.

Table A.1 — Integrity of the structure

Characteristic	Requirement	Test parameters		Test method
		Parameter	Value	
Integrity of the structure after deflection	> 80 % of the initial stiffness value	Deflection	30 % of d_{em}	EN ISO 13968
		Position of test piece	When applicable, at 0°, 45° and 90° from the upper plate	

For the determination of the integrity of the structure after deflection of co-extruded pipes, the following procedure shall be applied:

a) determine the initial ring stiffness of the pipe in accordance with EN ISO 9969;

b) carry out the ring flexibility test in accordance with EN ISO 13968;

c) after a 1 h period for recovery, determine again the ring stiffness in accordance with EN ISO 9969.

The ring stiffness of the co-extruded pipe shall be at least 80 % of the initial ring stiffness.

Annex B
(normative)

Pipes with peelable layer

B.1 General

This annex specifies the geometrical, mechanical and physical properties of those PE pipes (outside diameter d_n) having a peelable and contiguous, thermoplastics layer on the outside of the pipe ("coated pipe"), intended to be used for the supply of gaseous fuels. Marking requirements are also given.

The PE-compound used for the production of the base pipe shall be in accordance with EN 1555-1 and the base pipe shall fulfil all the requirements of this document after removal of the peelable layer, with the exception of appearance, colour and marking. Requirements for colour are given in 6.2.

The external peelable layer shall be manufactured from a thermoplastic material. When attached, the peelable layer shall not affect the ability of the PE pipe to meet the performance requirements of this document.

If an adhesive layer is used to attach the peelable layer, it shall be removable without affecting the jointing process. The preparation for the jointing process shall follow normal procedures.

NOTE Other types of layered pipes are covered by other International Standards e.g. ISO 17484-1 [11] or ISO 18225 [12].

B.2 Geometrical characteristics

The geometrical characteristics of the pipe, with the peelable layer removed, shall be in accordance with Clause 7.

B.3 Mechanical characteristics

The peelable layer shall not have a detrimental effect on the pipe or vice versa. The mechanical characteristics of the pipe, with the peelable layer removed, shall be in accordance with Clause 8, and the attachment of the peelable layer shall not affect the ability of the pipe to conform to those requirements.

The mechanical characteristics of the peelable layer after weathering should be agreed between the manufacturer and the end user.

B.4 Physical characteristics

The physical characteristics of the pipe, with the peelable layer removed, shall be in accordance with Clause 9.

B.5 Peelable layer adhesion

The peelable layer shall be resistant to detachment during storage and installation.

The peelable layer shall be manually removable prior to jointing using simple tools.

B.6 Marking

Marking shall be applied to the peelable layer and shall be in accordance with Clause 11.

In addition, the peelable layer shall be provided with marking clearly distinguishing the pipe from non-coated pipe in service. For example, identification stripes may be used for this purpose.

The peelable layer shall also carry marking that warns that the peelable layer shall be removed prior to electrofusion, butt fusion and mechanical jointing.

If possible, the base pipe may be marked in accordance with Clause 11.

Annex C
(normative)

Squeeze-off technique

In certain countries, the squeeze-off technique is used to restrict the flow of gas in PE piping systems during maintenance and repair operations.

If the end-user desires to employ the technique, evidence shall be provided to the end-user that after re-rounding of the squeezed-off pipe, the requirements for hydrostatic strength test at 1 000 h/80 °C of the pipe according to Table 4 continue to be fulfilled where squeeze-off is performed in accordance with the method recommended by the manufacturer of pipes or a method using a reinforcement sleeve.

NOTE EN 12106 provides a procedure and test method for squeeze-off.

Bibliography

[1] EN 1555-3, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*

[2] EN 1555-4, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 4: Valves*

[3] CEN/TS 1555-7, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 7: Guidance for the assessment of conformity*

[4] EN 12007-2, *Gas infrastructure — Pipelines for maximum operating pressure up to and including 16 bar — Part 2: Specific functional requirements for polyethylene (MOP up to and including 10 bar)*

[5] EN 12106, *Plastics piping systems — Polyethylene (PE) pipes — Test method for the resistance to internal pressure after application of squeeze-off*

[6] EN 14541-1:2022, *Plastics pipes and fittings — Utilisation of thermoplastics recyclates — Part 1: Vocabulary*

[7] CEN/TR 15438, *Plastics piping systems — Guidance for coding of products and their intended uses*

[8] ISO 4065, *Thermoplastics pipes — Universal wall thickness table*

[9] ISO 12176-4, *Plastics pipes and fittings — Equipment for fusion jointing polyethylene systems — Part 4: Traceability coding*

[10] ISO 12176-5, *Plastics pipes and fittings — Equipment for fusion jointing polyethylene systems — Part 5: Two-dimensional data coding of components and data exchange*

[11] ISO 17484-1, *Plastics piping systems — Multilayer pipe systems for indoor gas installations with a maximum operating pressure up to and including 5 bar (500 kPa) — Part 1: Specifications for systems*

[12] ISO 18225, *Plastics piping systems — Multilayer piping systems for outdoor gas installations — Specifications for systems*

[13] KRATOCHVILLA T., EREMIASCH R., BRUCKNER C. *Accelerated pipe test methods to evaluate PE 100-RC materials – Possibilities for ISO standardisation*, Plastic Pipes XIX, September 2018 https://www.pe100plus.com/PPCA/Accelerated-pipe-test-methods-to-evaluate-PE-100-RC-materials-Possibilities-for-iso-standardisation-p1651.html

[14] TGM AUSTRIA, *Accelerated N.P.T. (ANPT) on pipes made of PE 80, PE 100 and PE 100-RC*, TGM – VA KU 25 550/8, December 2019, see www.pe100plus.com.

[15] KIWA NEDERLAND, *Interlaboratory comparison Accelerated Notch Pipe test (ANPT) ISO 13479*, LC 18841-2a, October 2020 https://www.pe100plus.com/Download/News/PieceJointeInfo/fichier/380.pdf

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than one device provided that it is accessible by the sole named user only and that only one copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than one copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright and Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member.**

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email cservices@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services
Tel: +44 345 086 9001
Email: cservices@bsigroup.com

Subscriptions
Tel: +44 345 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

bsi.