SLOVENSKI STANDARD
SIST-TS CEN/TS 1555-7:2003

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Cevni sistemi iz polimernih materialov za oskrbo s plinastimi gorivi - Polietilen (PE) - 7. del: Smernice za ugotavljanje skladnosti

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 7: Guidance for the assessment of conformity

Kunststoff-Rohrleitungssystme für die Gasversorgung - Polyethylen (PE) - Teil 7: Empfehlungen für die Beurteilung der Konformität

Systemes de canalisations en plastiques pour la distribution de combustibles gazeux - Polyéthylene (PE) - Partie 7: Guide pour l'évaluation de la conformité

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83.140.30	Cevi, fitingi in ventili iz polimernih materialov	Plastics pipes, fittings and valves
91.140.40	Sistemi za oskrbo s plinom	Gas supply systems

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English version

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 7: Guidance for the assessment of conformity

Systèmes de canalisations en plastiques pour la distribution de combustibles gazeux - Polyéthylène (PE) - Partie 7: Guide pour l'évaluation de la conformité

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This Technical Specification (CEN/TS) was approved by CEN on 25 November 2002 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

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

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Contents

Foreword

This document (CEN/TS 1555-7:2003) has been prepared by Technical Committee CEN /TC 155, "Plastics piping systems and ducting systems", the secretariat of which is held by NEN.

It has been prepared in liaison with CEN/TC 234 "Gas supply".

This Technical Specification can be used to support elaboration of national third party certification procedures for products conforming to the applicable Parts of EN 1555.

This Technical Specification 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 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, under the general title *Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE)*

— *Part 1: General*

— *Part 2: Pipes*

— *Part 3: Fittings*

— *Part 4: Valves*

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

— *Part 7: Guidance for assessment of conformity (this Technical Specification).*

NOTE The document dealing with recommended practice for installation which was initially submitted for CEN enquiry as prEN 1555-6 was withdrawn when EN 12007-2 [1], prepared by CEN/TC 234 "Gas supply", was published with the title "*Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 2: Specific functional recommendations for polyethylene (MOP up to and including 10 bar)*".

This document includes the following:

— Annex A (normative) Change of compound

— Bibliography.

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

Introduction

The System Standard, of which this is Part 7, specifies the requirements for a piping system and its components made from polyethylene (PE) and is intended to be used for the supply of gaseous fuels.

Requirements and test methods for material and components of the piping system are specified in EN 1555-1, EN 1555-2, EN 1555-3 and EN 1555-4. Characteristics for fitness for purpose are covered in EN 1555-5. Recommended practice for installation is given in EN 12007-2 [1] prepared by CEN/TC 234.

This Part of EN 1555 gives guidance to procedures and requirements for the assessment of conformity of materials, components, joints and is intended to be used by manufacturers, inspection bodies, testing laboratories and certification bodies.

1 Scope

This Part of EN 1555 gives guidance for assessment of conformity to be included in the manufacturer's quality plan as part of the quality system.

This Part of EN 1555 includes:

a) requirements for materials, components and joints given in the applicable Parts of EN 1555;

b) requirements for the manufacturer's quality system;

NOTE 1 It is recommended that the quality system conforms to EN ISO 9001 [2].

c) definitions and procedures to be applied if third party certification is involved.

NOTE 2 If third party certification is involved, it is recommended that the certification body is accredited to EN 45011 [3] or EN 45012 [4], as applicable.

In conjunction with the other Parts of EN 1555 it is applicable to PE pipes, fittings, and valves, their joints and to joints with components of other materials intended to be used under the following conditions:

a) a maximum operating pressure, MOP, up to and including 10 bar [1)];

b) an operating temperature of 20 °C as reference temperature.

NOTE 3 For other operating temperatures, derating coefficients can be used, see EN 1555-5.

For mechanical fittings conforming to ISO 10838-1 [5], ISO 10838-2 [6] or ISO 10838-3 [7], as applicable, guidance for assessment of conformity is not given in this part of EN 1555. When requested, a quality plan based on the tests mentioned in ISO 10838-1 [5], ISO 10838-2 [6] or ISO 10838-3 [7], as applicable, should be set up in agreement between user and manufacturer.

EN 1555 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 regulations and installation practices or codes.

2 Normative references

This European Technical Specification 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 Technical Specification only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 1555-1:2002, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General.*

EN 1555-2:2002, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes.*

EN 1555-3:2002, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings.*

EN 1555-4:2002, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 4: Valves.*

EN 1555-5:2002, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system.*

EN ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification and designation — Overall service (design) coefficient (ISO 12162:1995).*

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1) 1 bar = 0,1 MPa

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.*

ISO 2859-2, *Sampling procedures for inspection by attributes — Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection.*

ISO 6259-1, *Thermoplastics pipes – Determination of tensile properties – Part 1: General test method.*

ISO 6259-3, *Thermoplastics pipes – Determination of tensile properties – Part 3: Polyolefin pipes.*

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 13953, *Polyethylene (PE) pipes and fittings — Determination of the tensile strength and failure mode of test pieces from a butt-fused joint.*

ISO 13954, *Plastics pipes and fittings — Peel decohesion test for polyethylene (PE) electrofusion assemblies of nominal outside diameter greater than or equal to 90 mm.*

ISO 13955, *Plastics pipes and fittings — Crushing decohesion test for polyethylene (PE) electrofusion assemblies.*

ISO/DIS 13956,, *Plastics pipes and fittings — Determination of cohesive strength — Tear test for polyethylene (PE) saddle assemblies.*

3 Terms and definitions, symbols and abbreviations

For the purposes of this Technical Specification, the terms and definitions, symbols and abbreviations given in prEN 1555-1:2002, prEN 1555-3:2002, prEN 1555-4:2002 and prEN 1555-5:2002, as applicable, apply together with the following.

3.1 Terms and definitions

3.1.1
certification body
impartial body, governmental or non-governmental, possessing the necessary competence and responsibility to carry out certification of conformity according to given rules of procedure and management

3.1.2
inspection body
impartial organization or company, approved by a certification body as possessing the necessary competence to verify and/or to carry out initial type testing, witness testing, audit testing, and inspection of the manufacturer's factory production control in accordance with the relevant European Standard

3.1.3
testing laboratory
laboratory which measures, tests, calibrates or otherwise determines the characteristics of the performance of materials and products

3.1.4
quality system
organizational structure, responsibilities, procedures, processes and resources for implementing quality management (see EN ISO 9000 [8])

3.1.5
quality plan
document setting out the specific quality practices, resources and sequence of activities relevant to a particular product or range of products

3.1.6
type testing (TT)
testing performed to prove that the material, component, assembly is capable of conforming to the requirements given in the relevant standard

NOTE A component is a pipe, a fitting, or a valve intended to be a part of a piping system.

3.1.7
preliminary type testing (PTT)
type testing carried out by or on behalf of the manufacturer

3.1.8
initial type testing (ITT)
type testing carried out by or on behalf of a certification body for certification purposes

3.1.9
batch release test (BRT)
test performed by the manufacturer on a batch of material or components which has to be satisfactorily completed before the batch can be released

3.1.10
process verification test (PVT)
test performed by the manufacturer on material, components, assemblies at specific intervals to confirm that the process continues to be capable of producing components conforming to the requirements given in the relevant standard

NOTE Such tests are not required to release batches of components and are carried out as a measure of process control.

3.1.11
audit test (AT)
test performed by or on behalf of a certification body to confirm that the material, components, assemblies continues to conform to the requirements given in a System Standard and to provide information to assess the effectiveness of the quality system

3.1.12
indirect test (IT)
test performed by the manufacturer, different from that specified for that particular characteristic, having verified its correlation with the specified test

3.1.13
witness testing (WT)
testing accepted by an inspection or certification body as initial type testing and/or audit testing, which is carried out by, or on behalf of the manufacturer and supervised by a representative of the inspection or certification body, qualified in testing

3.1.14
material batch
clearly identifiable quantity of a particular material

3.1.15
compound batch
clearly identifiable quantity of a given homogeneous compound manufactured under uniform conditions. The compound batch is defined and identified by the compound manufacturer

3.1.16
production batch
clearly identifiable collection of units, manufactured consecutively or continuously under the same conditions, using material or compound conforming to the same specification

3.1.17
pipe batch
number of pipes, all of them of the same nominal outside diameter, wall thickness and marking, extruded from the same compound on the same machine. The pipe batch is defined and identified by the pipe manufacturer

3.1.18
fitting or valve batch
number of fittings or valves of the same type, identical dimensional characteristics (same nominal diameter, same thickness) and same marking, from the same compound. The fitting or valve batch is defined and identified by the fitting or valve manufacturer.

3.1.19
lot
clearly identifiable sub-division of a batch for inspection purposes

3.1.20
sample
one or more units of product drawn from a batch or lot, selected at random without regard to quality

NOTE The number of units of product in the sample is the sample size.

3.1.21
acceptable quality level (AQL)
when a continuous series of lots or batches is considered, the quality level which for the purposes of sampling inspection is the limit of a satisfactory process average (see ISO 2859-1 and ISO 2859-2)

NOTE The designation of an AQL does not imply that a manufacturer has the right knowingly to supply any non-conforming unit of product.

3.1.22
inspection level
the relationship between the lot or batch size and the sample size (see ISO 2859-1)

3.1.23
group
collection of similar components from which samples are selected for testing purposes

3.1.24
product type
pipe or a fitting or a valve or their main parts, of the same design, from a particular compound, suitable for the conveyance of gaseous fuels, meeting the requirements given in a standard

3.1.25
body type
same body of a valve which contains different end connections

3.1.26
cavity
part of the injection mould which gives the form to the injection-moulded product. A mould can consist of several cavities

3.2 Abbreviations

NOTE 1 For reasons of avoiding misunderstanding the following abbreviations are kept the same in each of the languages. For the same reason the terms are given in the three languages. (E for English, F for French and D for German)

NOTE 2 In the French language the abbreviation for « acceptable quality level » (AQL) is NQA, however for the purpose of this European Technical Specification for all three languages the same abbreviation (AQL) is used.

AQL en : acceptable quality level
fr : niveau de qualité acceptable
de : annehmbare Qualitätsgrenzlage

AT en : audit test
fr : essai d'audit
de : Überwachungsprüfung

BRT en : batch release test
fr : essai de libération de lot de fabrication
de : Freigabeprüfung einer Charge

IT en : indirect test
fr : essai indirect
de : indirekte Prüfung

ITT en : initial type testing
fr : essais de type initiaux
de : Erst-Typprüfung

PTT en : preliminary type testing
fr : essais de type préliminaires
de : vorausgehende Typprüfung

PVT en : process verification test
fr : essai de vérification du procédé de fabrication
de : Prozessüberprüfung

TT en : type testing
fr : essais de type
de : Typprüfung

WT en : witness testing
fr : essais témoins
de : Prüfung unter Aufsicht

4 Requirements

4.1 General

4.1.1 Compound, components, joints shall conform to the requirements given in EN 1555-1:2002, prEN 1555-2:2002, prEN 1555-3:2002, prEN 1555-4:2002 and prEN 1555-5:2002, as applicable.

4.1.2 Components and/or joints shall be produced by the manufacturer under a quality management system which includes a quality plan.

4.2 Testing and inspection

4.2.1 Grouping

For the purposes of this Technical Specification the size groups given in Table 1 shall apply for pipes, fittings and valves.

Table 1 — Size groups for pipes, fittings and valves

Dimensions in millimetres

Size group	1	2	3
Nominal outside diameter, d_n, for pipes, fittings and valves	$d_n < 75$	$75 \leq d_n < 250$	$250 \leq d_n \leq 630$

Fittings are also grouped according to jointing technique

— (A) Electrofusion socket fitting;

— (B) Electrofusion saddle fitting;