



SLOVENSKI STANDARD

oSIST prEN 1366-3:2020

01-april-2020

Preskusi požarne odpornosti servisnih inštalacij - 3. del: Tesnitve prebojev

Fire resistance tests for service installations - Part 3: Penetration seals

Feuerwiderstandsprüfungen für Installationen - Teil 3: Abschottungen

Essais de résistance au feu des installations techniques - Partie 3 : Calfeutrements de trémies

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Ta slovenski standard je istoveten z: **prEN 1366-3**

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ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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ICS 13.220.50

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English Version

Fire resistance tests for service installations - Part 3: Penetration seals

Essais de résistance au feu des installations techniques
- Partie 3 : Calfeutrements de trémies

Feuerwiderstandsprüfungen für Installationen - Teil 3:
Abschottungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 127.

If this draft becomes a European Standard, 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.

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prEN 1366-3:2019 (E)**European foreword**

This document (prEN 1366-3:2018) has been prepared by Technical Committee CEN/TC 127 “*Fire Safety in Buildings*”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1366-3:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Annexes A to G are normative. Annex H is informative.

EN 1366 ‘*Fire resistance tests for service installations*’ consists of the following:

- Part 1: *Ducts*
- Part 2: *Fire dampers*
- Part 3: *Penetration seals*
- Part 4: *Linear joint seals*
- Part 5: *Service ducts and shafts*
- Part 6: *Raised access floors and hollow core floors*
- Part 7: *Closures for conveyors and track bound transportation systems*
- Part 8: *Smoke extraction ducts*
- Part 9: *Single compartment smoke extraction ducts*
- Part 10: *Smoke control dampers*
- Part 11: *Fire protective systems for cable systems and associated components*
- Part 12: *Non-mechanical fire barrier for ventilation ductwork*
- Part 13: *Chimneys (in course of preparation)*
- Part 14: *Kitchen extraction ducts*

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Introduction

This part of the EN 1366 series has been prepared to provide a method of test for assessing the contribution of a penetration seal to the fire resistance of separating elements when they have been penetrated by a service or services.

Caution

The attention of all persons concerned with managing and carrying out fire resistance testing is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases will be emitted during the test. Mechanical and operational hazards might also arise during the construction of the test elements or structures, their testing and disposal of test residues.

An assessment of all potential hazards and risks to health should be made and safety precautions should be identified and provided. Written safety instructions should be issued. Appropriate training should be given to relevant personnel. Laboratory personnel should ensure that they follow written safety instructions at all times.

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prEN 1366-3:2019 (E)**1 Scope**

This part of the EN 1366 series specifies a method of test and criteria for the evaluation (including field of direct application rules) of the ability of a penetration seal to maintain the fire resistance of a separating element at the position at which it has been penetrated by a service or services. Penetration seals used to seal gaps around chimneys, air ventilation systems, fire rated ventilation ducts, fire rated service ducts, shafts and smoke extraction ducts as well as combined penetration seals are excluded from this part of the EN 1366 series. Supporting constructions are used in this part of the EN 1366 series to represent separating elements such as walls or floors. These simulate the interaction between the test specimen and the separating element into which the sealing system is to be installed in practice.

This part of the EN 1366 series is intended to be used in conjunction with EN 1363-1.

The purpose of a test described in this part of the EN 1366 series is to assess the integrity and insulation performance of the penetration seal, of the penetrating service or services and of the separating element in the surrounding area of the penetration seal.

No information can be implied by the test concerning the influence of the inclusion of such penetrations and penetration seals on the loadbearing capacity of the separating element.

It is assumed that in each case the lintel above a penetration seal in the wall is designed in hot and cold state in a way that it does not apply any additional vertical load on the penetration seal.

It is not the intention of this test to provide quantitative information on the rate of leakage of smoke and/or hot gases or on the transmission or generation of fumes. Such phenomena are only noted in the test report in describing the general behaviour of test specimens during the test.

Tests in accordance with this part of the EN 1366 series are not intended to supply any information on the ability of the penetration seal to withstand stress caused by movements or displacements of the penetrating services.

The risk of spread of fire downwards, caused by burning material, which drips through a pipe downwards to floors below, cannot be assessed with this test.

Tests in accordance with this part of the EN 1366 series do not address any risks associated with leakage of dangerous liquids or gases caused by failure of pipes in case of fire.

Tests in accordance with this part of the EN 1366 series of pipe penetration seals for pipes of pneumatic dispatch systems, pressurized air systems, etc. simulate a situation where the systems are shut off in case of fire.

Explanatory notes to this test method are given in Annex H.

All values given without tolerances in this document are nominal ones unless otherwise specified.

All pipe diameters are outside diameters unless otherwise specified.

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 520, *Gypsum plasterboards – Definitions, requirements and test methods*

EN 1329-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: Specifications for pipes, fittings and the system*

- EN 1363-1, *Fire resistance tests - Part 1: General Requirements*
- EN 1363-2, *Fire resistance tests - Part 2: Alternative and additional procedures*
- EN 1451-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polypropylene (PP) - Part 1: Specifications for pipes, fittings and the system*
- EN 1453-1, *Plastics piping systems with structured-wall pipes for soil and waste discharge (low and high temperature) inside buildings - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: Specifications for pipes and the system*
- EN 1455-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Acrylonitrile-butadiene-styrene (ABS) - Part 1: Requirements for pipes, fittings and the system*
- EN 1519 (all parts), *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polyethylene (PE)*
- EN 1565-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Styrene copolymer blends (SAN+PVC) - Part 1: Specifications for pipes, fittings and the system*
- EN 1566-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Chlorinated poly(vinyl chloride) (PVC-C) - Part 1: Specifications for pipes, fittings and the system*
- EN 10305-4, *Steel tubes for precision applications - Technical delivery conditions - Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems*
<https://standards.iteh.ai/catalog/standards/sist/f099b791-cb83-4a2a-95ea->
- EN 10305-6, *Steel tubes for precision applications - Technical delivery conditions - Part 6: Welded cold drawn tubes for hydraulic and pneumatic power systems*
- EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) – Part 2: Pipes*
- EN 12449, *Copper and copper alloys - Seamless, round tubes for general purposes*
- EN 12666-1, *Plastics piping systems for non-pressure underground drainage and sewerage – Polyethylene (PE) – Part 1: Specifications for pipes, fittings and the system*
- EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*
- EN 13501-2, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services*
- EN 13600, *Copper and copper alloys - Seamless copper tubes for electrical purposes*
- EN 61386-21, *Conduit systems for cable management - Part 21: Particular requirements - Rigid conduit systems (IEC 61386-21)*
- EN ISO 1452-2, *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure - Unplasticized poly(vinyl chloride) (PVC-U) - Part 2: Pipes (ISO 1452-2)*

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EN ISO 13943, *Fire safety - Vocabulary (ISO 13943)*

EN ISO 15493, *Plastics piping systems for industrial applications - Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) - Specifications for components and the system - Metric series (ISO 15493)*

HD 21.3, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 3: Non-sheathed cables for fixed wiring*

HD 603 S1, *Distribution cables of rated voltage 0,6/1 kV*

HD 604 S1, *0,6/1 kV and 1,9/3,3 kV power cables with special fire performance for use in power stations*

3 Terms and definitions, symbols, units and abbreviations**3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 1363-1 and EN ISO 13943 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1.1 penetration

aperture in a separating element with one or more services passing through

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3.1.2 penetration seal

system used to maintain the fire resistance of a separating element at the position where one or more services pass through or where there is provision for services to pass through a separating element (for the latter see blank penetration seal)

3.1.3 blank penetration seal

aperture in the separating element without services passing through which is sealed or closed by the specified seal

3.1.4 single service penetration seal

penetration seal intended for penetrations with only one service passing through

Note 1 to entry: A tied cable bundle in accordance with Table A.1 may be treated as single service, see Annex B.1

3.1.5 multiple service penetration seal

penetration seal intended for penetrations where more than one service of the same type (e.g. cables or pipes) pass through

3.1.6**mixed penetration seal**

penetration seal intended for penetrations where more than one type of services (e.g. cables and plastic and/or metal pipes, but no ducts or fire dampers) pass through

3.1.7**combined penetration seal**

mixed penetration seal with fire ducts or fire dampers passing through

3.1.8**penetration seal - large**

penetration seal intended for a penetration larger than or equal to 300 mm x 300 mm or 340 mm in diameter

3.1.9**penetration seal - small**

penetration seal intended for a penetration smaller than 300 mm x 300 mm or 340 mm in diameter

3.1.10**aperture part of the penetration seal**

part of the penetration seal used to fill the penetration

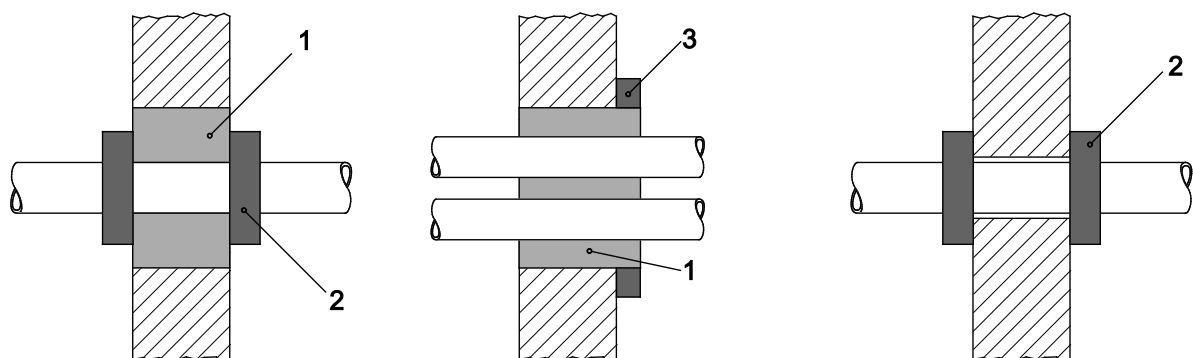
Note 1 to entry: See Figure 1.

Note 2 to entry: Parts of the penetration seal filling the space created by a beading or extending over the penetration on the separating element (e.g. a coating of a slab) are also taken as part of the aperture part of the penetration seal.

3.1.11**service part of the penetration seal**

part of the penetration seal that is related to a service

EXAMPLE *Insulation material on pipes, intumescent coatings on cables and/or pipe closure devices on plastic pipes; see Figure 1.*

**Key**

- 1 aperture part of the penetration seal (e.g. mortar, foam)
- 2 service part(s) of the penetration seal (as an example pipe collars are shown)
- 3 beading

Figure 1 — Aperture part and service part of the penetration seal

prEN 1366-3:2019 (E)**3.1.12****modular system**

pre-sized frame into which are installed elastomeric insert blocks, compressed around the service

3.1.13**single opening frame**

rectangular or circular frame of a modular system, with predefined dimensions in different sizes and variations

Note 1 to entry: See Annex B, Figure B.2.

3.1.14**combination frame**

rectangular frame of a modular system incorporating two or several single openings

Note 1 to entry: See Annex B, Figure B.2.

3.1.15**single opening**

area of the modular system within a single opening frame or one division of a combination frame which is available for the modules

Note 1 to entry: See Annex B, Figure B.2.

3.1.16**(single) module**

single block, available in different sizes, to be used inside a single opening of a modular system, to seal around penetrating services in different sizes and shapes or as blanks or filler blocks

Note 1 to entry: See Annex B, Figure B.2.
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3.1.17**annular space**

width of the gap between a centred positioned circular single service and the aperture edge in a circular penetration

3.1.18**cable box**

housing with intumescent inlays that forms a channel

Note 1 to entry: A cable box is fitted with a device to prevent the passage of cold smoke.

3.1.19**pipe closure device**

reactive device to seal penetrations for insulated or non-insulated pipes

Note 1 to entry: Pipe closure devices are e.g. collars, wraps and sleeves: Collars incorporate an outer casing which acts as a restraint for an intumescent material, enabling the collar to be either surface fixed to the separating element or incorporated within it; wraps are usually wrapped around the pipe and located within the separating element, which acts as a restraint for the intumescent material; Sleeves pass completely through the separating element and may include an outer casing.

3.1.20 service

part of a line to convey electrical power, waves, liquids or gases such as cables, conduits, pipes (with or without insulation) or trunkings

3.1.21 single arrangement

arrangement of penetration seals $\leq 300 \text{ mm} \times 300 \text{ mm}$ (or equivalent area) or services with a distance of 100 mm or more between all penetration seals / services or arrangement of penetration seals $> 300 \text{ mm} \times 300 \text{ mm}$ (or equivalent area) with a distance of 200 mm or more between all penetration seals

Note 1 to entry: See Figure 2.

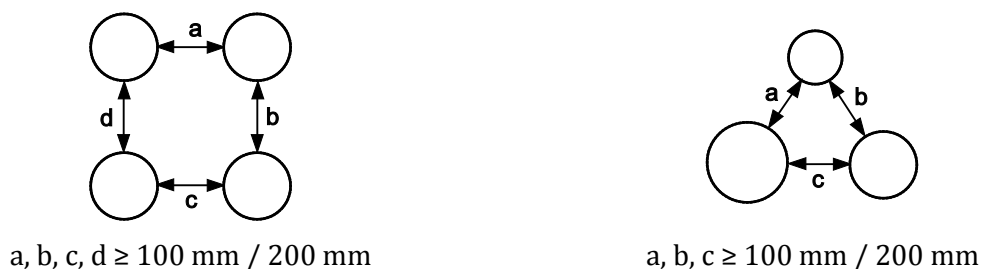
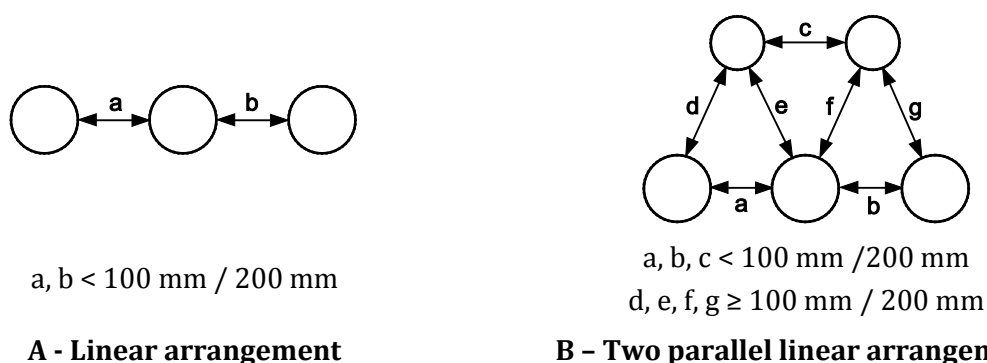


Figure 2 — Single arrangement of penetration seals / services
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3.1.22 linear arrangement

arrangement of minimum two penetration seals $\leq 300 \text{ mm} \times 300 \text{ mm}$ (or equivalent area) or minimum two services in a line with a distance of less than 100 mm between the penetration seals or services and where the distance to other penetration seals/services not in this line is $\geq 100 \text{ mm}$ or arrangement of minimum two penetrations $> 300 \text{ mm} \times 300 \text{ mm}$ with a distance of less than 200 mm between the penetration seals and where the distance to other penetration seals not in this line is $\geq 200 \text{ mm}$

Note 1 to entry: See Figure 3.



A - Linear arrangement

B - Two parallel linear arrangements

Figure 3 — Linear arrangement of penetration seals / services

prEN 1366-3:2019 (E)**3.1.23****cluster arrangement**

arrangement of minimum three penetration seals $\leq 300 \text{ mm} \times 300 \text{ mm}$ (or equivalent area) or minimum three services with a distance of less than 100 mm between all of the penetration seals or services or arrangement of minimum three penetration seals $> 300 \text{ mm} \times 300 \text{ mm}$ (or equivalent area) with a distance of less than 200 mm between all of the penetration seals

Note 1 to entry: See Figure 4 A and B.

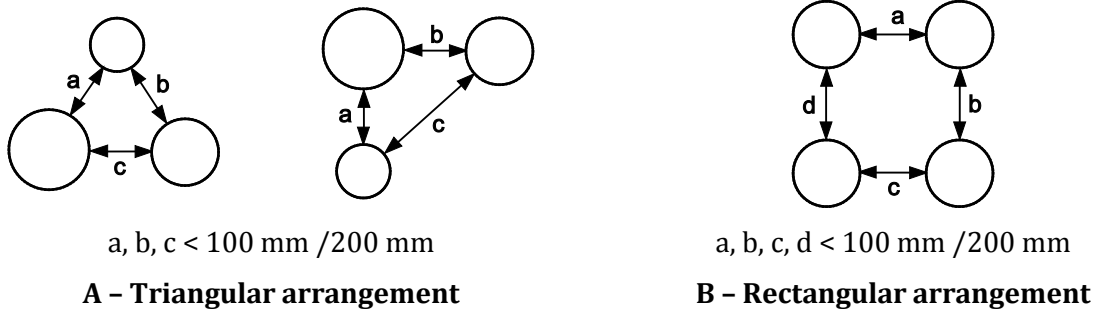


Figure 4 — Cluster arrangement of penetration seals / services

3.1.24**bus bar**

strip or bar of copper, brass or aluminium that conducts electricity, either as a single element or within a bus bar trunking unit

3.1.25**bus bar trunking unit**

unit of bus bar trunking system complete with bus bars, their supports and insulation, external enclosure and any fixing and connection means to other units, with or without tap-off facilities

[SOURCE: EN 60439-2:2000, 2.3.5]

3.1.26**non-sheathed cable****wire**

cable with only one layer of covering

Note 1 to entry: Non-sheathed cables are normally single core cables

3.1.27**sheathed cable**

single or multi-core cable with individual covering of the cores and an additional protective covering of the assembly

3.1.28**coaxial cable****coax**

cable of which the transmission line is in the form of two coaxial conductors

Note 1 to entry: For examples, see H.4.1.3.

3.1.29 tied cable bundle

bundle consisting of a number of parallel cables tightly packed and firmly tied together, see Figure 5

Note 1 to entry: When a penetration containing a tied cable bundle is sealed off, no seal material can be installed between the cables of the tied bundle - different to the cable bunches of A- and C-cables of the standard configuration in accordance with Annex A.

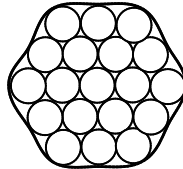


Figure 5 — Tied cable bundle

3.1.30 cable carrier

component of a cable installation system for the continuous support of cables

EXAMPLES *Ladders, trays, baskets*, that penetrate the penetration seal, excluding the local support/fixing construction.

3.1.31 conduit

metal or plastic casing designed to accommodate cables. Normally a conduit is circular in section

Note 1 to entry: See also *trunking*. [oSIST prEN 1366-3:2020](https://standards.iteh.ai/catalog/standards/sist/f099b791-cb83-4a2a-95ea-7edc34bf4112/osist-pren-1366-3-2020)

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3.1.32 continued conduit

conduit which in practice passes through the compartments adjacent to the separating element without any interruption and opening

Note 1 to entry: see Figure C.2.

3.1.33 flush conduit

conduit which is positioned within the building element ending flush with the wall/floor surface and includes a seal inside the conduit.

Note 1 to entry: see Figure C.2.

3.1.34 projecting conduit

conduit which in practice projects on both sides of the building element for a particular length and includes a seal inside the conduit at both ends of the conduit

Note 1 to entry: see Figure C.2.

3.1.35 conduit bundle

bundle consisting of a number of parallel conduits