SLOVENSKI STANDARD
SIST EN 15882-5:2021

01-december-2021

Razširjena uporaba rezultatov preskusov požarne odpornosti servisnih inštalacij - 5. del: Kombinirane tesnitve prebojev

Extended application of results from fire resistance tests for service installations - Part 5: Combined penetration seals

Erweiterter Anwendungsbereich der Ergebnisse aus Feuerwiderstandsprüfungen für Installationen - Teil 5: Kombinierte Abschottungen

Application étendue des résultats des essais de résistance au feu des installations de service - Partie 5 : Calfeutrements de trémie combinés

Ta slovenski standard je istoveten z: **EN 15882-5:2021**

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements

SIST EN 15882-5:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15882-5

October 2021

ICS 13.220.99

English Version

Extended application of results from fire resistance tests for service installations - Part 5: Combined penetration seals

Application étendue des résultats des essais de résistance au feu des installations de service - Partie 5 : Calfeutrements de trémie combinés

Erweiterter Anwendungsbereich der Ergebnisse aus Feuerwiderstandsprüfungen für Installationen - Teil 5: Kombinierte Abschottungen

This European Standard was approved by CEN on 25 July 2021.

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, Turkey 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

Ref. No. EN 15882-5:2021 E

Contents

Page

European foreword

This document (EN 15882-5:2021) has been prepared by Technical Committee CEN/TC 127 “Safety in fire”, the secretariat of which is held by BSI.

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 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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 series has the general title *Extended application of results from fire resistance tests for service installations* and consists of the following parts:

- Part 1: Fire resisting ducts
- Part 2: Fire dampers
- Part 3: Penetration seals
- Part 5: Combined penetration seals

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, Turkey and the United Kingdom.

1 Scope

The purpose of this document is to provide the principles and guidance for the preparation of extended application documents for combined penetration seals where the systems were tested in accordance with (EN 1366-3 and EN 1366-1) or (EN 1366-3 and EN 1366-2). The field of the extended application document is additional to the direct field of application given within EN 1366-1, EN 1366-2 and EN 1366-3 and can be applied on a number of tests from each standard, which provide the relevant information for the formulation of an extended application.

This EXAP is intended to allow the penetration sealing of more than one service (e.g. cables, pipes, conduits) and four-sided fire resisting ducts (ventilation ducts) or fire dampers in the same penetration.

This EXAP is not used for extended applications in accordance with EN 1366-8, EN 1366-10 and/or EN 1366-12 (this will be dealt with in the next revision of the standard).

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 1363-1, *Fire resistance tests - Part 1: General requirements*

EN 1363-2, *Fire resistance tests - Part 2: Alternative and additional procedures*

EN 1366-1, *Fire resistance tests for service installations — Part 1: Ventilation ducts*

EN 1366-2, *Fire resistance tests for service installations - Part 2: Fire dampers*

EN 1366-3, *Fire resistance tests for service installations - Part 3: Penetration seals*

EN 15882-1, *Extended application of results from fire resistance tests for service installations — Part 1: Ducts*

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using 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 ISO 13943, *Fire safety - Vocabulary (ISO 13943)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1, EN 1363-2, EN 1366-1, EN 1366-2, EN 1366-3, EN 15882-1, EN 13501-1, EN 13501-2, 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 https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1
combined penetration seal
mixed penetration seal with fire ducts or fire dampers passing through

Note 1 to entry: In accordance with EN 1366-3, EN 1366-1 and EN 1366-2.

3.2
duct reinforcement
assembly reinforcing the duct at the penetration sealing system (if used)

Note 1 to entry: See Figure 3 and Figure 5.

3.3
test specimen
assembly for the fire test consisting of the penetrating service or services (e.g. cables, pipes, conduits) and fire resisting ducts (ventilation ducts or fire dampers) and the penetration seal materials or penetration seal devices, together with any service support construction, framing or beading

4 Extended application principles

Due to the diverse nature of materials and constructions used to seal openings in fire resistant separating elements, it has been necessary to separate the extended application principles into generic seal types. Principles common to all generic penetration seal types are given in EN 1366-3.

NOTE In any combined service penetration test in accordance with this document, it is not the intention to re-test the penetration sealing system but to identify if there are any interface effects between the fire resisting duct and other services that can cause the whole system to fail, such as radiating heat from the fire resisting duct or any service passing through the penetration seal.

Variables for each seal type, which require consideration, are included in this document. Examples are as follows:

a) supporting construction in accordance with EN 1366-3;

b) type of service;

c) size of service;

d) seal size maximum size penetration seal conducted in accordance with EN 1366-3 cannot be exceeded;

e) distance between services;

f) distance between penetrations;

g) layout and configuration of penetration services;

h) service support location; and

i) orientation of the services.

Classifications from tests results A to C in Figure 1 cannot be exceeded in 6.2 and 8.2 (even if a higher classification is achieved in test D).

Test results from this EXAP can only be used for combined penetration seals.

Each subclause gives the possible variation and the rule relating to the variation in accordance with 6.2 and 8.2.

In case of ambiguity, the overriding standard requirements shall be in accordance with EN 1366-3 (e.g. furnace pressure, supporting construction).

5 Pre-conditions for extended application — Fire Resisting Ducts (ventilation ducts)

5.1 Basic tests required

Basic tests shall have been conducted to allow the use of combined service penetrations in the same penetration sealing system.

Figure 1 shows the required basic test results to enable the use of the EXAP test. Test results from a minimum of 1 of each of box A and box B, and of both duct types for box C, shall have been previously achieved prior to moving on to the EXAP test. EXAP test requirements are in accordance with 5.2 and Annex B.

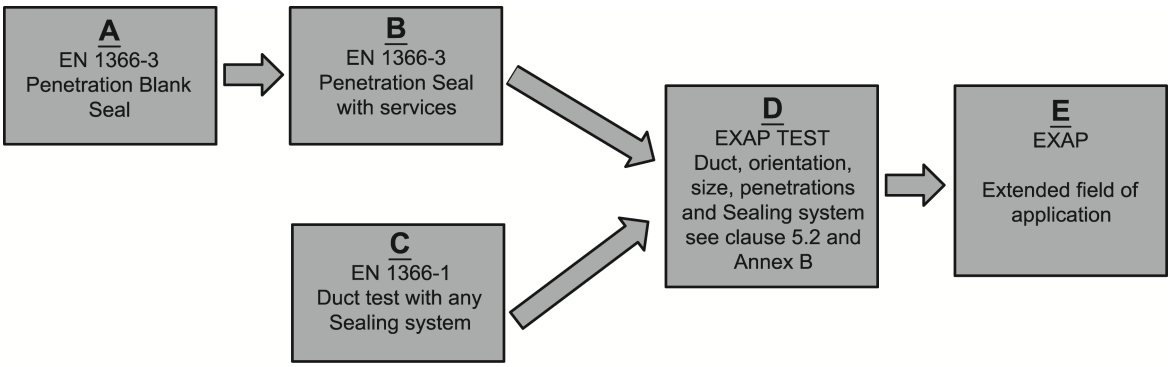
— Box A – Previously tested blank penetration sealing system required for the EXAP test.

— Box B – Previously test penetration sealing system with services required for the EXAP test.

— Box C – Duct type with any sealing system required for the EXAP test.

— Box D – Identical penetration sealing system as tested in boxes A and B, then incorporate duct from box C.

— Box E – Gives the extended field of application that can only be used for a combined penetration seal.



Key

A EN 1366-3, Maximum blank penetration size test for the required orientation(s) in the penetration seal — Result box A

B EN 1366-3, Maximum penetration size test(s) with the penetrating services intended to be incorporated in the combined penetration seal and required orientation in the penetration seal system to be used in 6.2.1 or 6.2.2 — Result box B

C EN 1366-1, Duct A test(s) in the required orientation — Result box C

D EN 1366-1, Duct B test(s) in the required orientation — Result box C

Figure 1 — The basic tests

Ducts tested in standard supporting construction without an additional penetration sealing system are not suitable for testing in line with this standard.

Test results from this EXAP can only be used for combined penetration seals.

5.2 Additional collaborative test requirements for the EXAP test with respect to fire resisting ducts (ventilation ducts)

5.2.1 General

The test can be conducted by multiple test sponsors, sharing each other's initial type testing results, or as a standalone approach if one test sponsor holds all the valid, relevant test data required.

- EN 1366-1: Maximum penetration size and edge distance required for the Type A duct in accordance with Table 1 if both fire resisting duct types are to be covered in the required orientation(s). Penetration sealing system can be with any type and supporting construction as box A and box B with the penetration services as defined in 5.2.2, Table 1; and

- EN 1366-1: Maximum penetration size and edge distance required for the Type B duct in accordance with Table 1 if both fire resisting duct types are to be covered in the required orientation(s). Penetration sealing system can be with any type shall be the identical penetration seal and supporting construction as box A and box B with the penetration services as defined in 5.2.2, Table 1. For test requirements refer to Annex B.

NOTE All information that refers to rectangular fire resisting ducts can also be used for circular fire resisting ducts.

5.2.2 Additional test requirements table — Fire resisting ducts

Table 1 — To be read in conjunction with Figures 1, 2, 3, 4, 5 and 6

	E, ES, EI, EIS classified systems			Combined penetration seal EXAP test setup and requirements — see Annex B
	Tested in accordance with EN 1366-1 Type A	**Tested in accordance with EN 1366-1 Type B**	**Tested in accordance with EN 1366-3**	**Additional test requirements for combined penetration seal systems**
Maximum seal size	As requested by test sponsor	As requested by test sponsor	As requested by test sponsor	Maximum required seal size, not exceeding the blank seal as tested in accordance with EN 1366-3, Figure 2
Rectangle duct size	(1 000 x 500) mm ± 10 mm	(1 000 x 250) mm ± 10 mm		Test duct B if both duct types are required. Should only one duct type be required, that type shall be tested. Required orientation shall be tested.
Circular duct size	(800 ± 10) mm	(630 ± 10) mm		
Duct position	(500 ± 50) mm from the free edge			(500 ± 50) mm from the free edge
Min. side space distance	As required by test sponsor with duct position in accordance with EN 1366-1	As required by test sponsor with duct position in accordance with EN 1366-1		Min. edge distance required
Bottom space distance				50 mm edge distance ± 100 mm
Max. top space distance				Max. edge distance required
Max. side space distance				
Blank seal size			Max. size required by test sponsor	Max. seal size as tested in accordance with EN 1366-3

	E, ES, EI, EIS classified systems			Combined penetration seal EXAP test setup and requirements — see Annex B
	Tested in accordance with EN 1366-1 Type A	Tested in accordance with EN 1366-1 Type B	Tested in accordance with EN 1366-3	Additional test requirements for combined penetration seal systems
Cable penetrating services			Standard cable configuration	Critical cables to be used: 1 x E type cable F type cable bunches 100 mm 2 x B type cable 1 x C3 type cable 300 mm perforated cable tray
Metallic pipe penetrating services			Non-standard configuration cables	Test those cables used in previous test in accordance with EN 1366-3 (can only use these cables in practice)
Plastic pipe penetrating services			Critical services as previously tested by test sponsor	Most critical pipes in accordance with EN 1366-3 formed in linear arrangement
Other types of service e.g. conduit, MLC pipes, etc.			As previously tested	Most critical to be included as required by the test sponsor
Other types of service e.g. conduit, MLC pipes, etc.				As required by the test sponsor
Other types of service e.g. Waveguides, Busbars				T/C position in accordance with EN 1366-3

	E, ES, EI, EIS classified systems			Combined penetration seal EXAP test setup and requirements — see Annex B
	Tested in accordance with EN 1366-1 Type A	Tested in accordance with EN 1366-1 Type B	Tested in accordance with EN 1366-3	Additional test requirements for combined penetration seal systems
Penetrating service thermocouples				Critical services shall be tested above the duct as per Figure 5
Penetrating service position				As required by the test sponsor
Penetrating service distances				As required by the test sponsor
Min. service length				Cable and pipe service shall extend 200 mm past any additional insulation/ penetration seal or other materials for E classified ducts as per Figure 6
NOTE 1 See worked example table in Annex A — Informative. NOTE 2 See template table in Annex A — Informative.				

5.2.3 Process for maximum seal size determination — Wall/floor

The maximum seal size for combined seals shall be defined by a blank seal test in accordance with EN 1366-3. For rigid seals (e.g. mortar) which do not require a blank seal test the maximum seal size shall be defined by the maximum seal size of the combined seal test.