



SLOVENSKI STANDARD
oSIST prEN 1366-5:2019
01-april-2019

Preskusi požarne odpornosti servisnih inštalacij - 5. del: Servisni kanali in jaški

Fire resistance tests for service installations - Part 5: Service ducts and shafts

Feuerwiderstandsprüfungen für Installationen - Teil 5: Installationskanäle und -schächte

iteh **STANDARD PREVIEW**
(standards.iteh.ai)

Ta slovenski standard je istoveten z: prEN 1366-5

<https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-6411caac9126/sist-en-1366-5-2021>

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.060.40	Dimniki, jaški, kanali	Chimneys, shafts, ducts

oSIST prEN 1366-5:2019

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 1366-5

February 2019

ICS 13.220.50; 91.060.40

Will supersede EN 1366-5:2010

English Version

Fire resistance tests for service installations - Part 5: Service ducts and shafts

Feuerwiderstandsprüfungen für Installationen - Teil 5:
Installationskanäle und -schächte

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.

This draft European Standard was established by CEN 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

Contents	Page
European foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Test equipment	7
4.1 General.....	7
4.2 Furnace	7
4.3 Loading equipment.....	7
4.4 Gas extraction equipment (optional).....	7
5 Test conditions.....	8
5.1 Furnace	8
5.2 Loading.....	8
6 Test specimen.....	8
6.1 Size.....	8
6.1.1 General.....	8
6.1.2 Length.....	8
6.2 Number	8
6.3 Design.....	9
6.3.1 General.....	9
6.3.2 Duct and shaft arrangement.....	9
7 Installation of test specimen.....	10
7.1 General.....	10
7.2 Standard supporting construction.....	11
7.3 Non-standard supporting constructions	11
8 Conditioning.....	11
8.1 General.....	11
8.2 Water based sealing materials.....	11
9 Application of instrumentation	11
9.1 Thermocouples	11
9.1.1 Furnace thermocouples (plate thermometers)	11
9.1.2 Thermocouple locations.....	12
9.2 Pressure.....	12
10 Test procedure	13
10.1 General.....	13
10.2 Test measurements and observations	13
10.2.1 General.....	13
10.2.2 Integrity.....	13
10.2.3 Insulation (temperature of the surfaces outside the furnace – for both fire exposure at the inside and exposure at the outside)	13
10.2.4 Additional observations	14
10.3 Termination of the test	14
11 Performance criteria	14
11.1 Integrity.....	14

11.2	Insulation.....	14
11.2.1	Insulation criteria for service ducts and shafts with combustible and non-combustible services.....	14
12	Test report	14
13	Field of direct application of test results	15
13.1	Walls or floors through which the service ducts or shafts lead.....	15
13.2	Sizes of ducts or shafts.....	15
13.3	Shapes.....	15
13.4	Admissible services	15
13.5	Suspension devices for ducts.....	15
13.5.1	Material and sizing.....	15
13.5.2	Elongation	16
13.6	Distances.....	16
13.6.1	Distance to the supporting construction.....	16
13.6.2	Distance of the first joint after the supporting construction.....	16
13.6.3	Distance between service ducts or service shafts in practice	16
13.7	Access panels.....	16
13.8	Cable outlets	16
	Bibliography	26

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 1366-5:2021

<https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-6411caac9126/sist-en-1366-5-2021>

prEN 1366-5:2019 (E)

European foreword

This document (prEN 1366-5:2019) 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document will supersede EN 1366-5:2010.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1366-5:2021

<https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-6411caac9126/sist-en-1366-5-2021>

Introduction

The purpose of this test is to measure the ability of a service duct or shaft to resist the spread of fire from one fire compartment to another with fire attack from inside or outside the duct or shaft. The test specimens incorporate joints, cable outlets and access openings as intended in practice and are suspended as they would be in practice. Test specimens of service ducts are not loaded as in practice, but a standard load is included to represent a typical service load. Test specimens of service shafts are not loaded as in practice, but a standard load is included to represent a typical service load.

CAUTION — The attention of all persons concerned with managing and carrying out this fire resistance test is drawn to the fact that fire testing may be hazardous, and there is a possibility that toxic and/or harmful smoke and gases may be involved during the test. Mechanical and operational hazards may 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1366-5:2021](https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-6411caac9126/sist-en-1366-5-2021)

<https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-6411caac9126/sist-en-1366-5-2021>

prEN 1366-5:2019 (E)**1 Scope**

This document specifies a method for determining the fire resistance of horizontal service ducts and vertical service shafts, which pass through walls or floors and enclose pipes and cables. The test scenario examines the behaviour of ducts and shafts exposed to fire either from outside or inside the system. This document is intended to be read in conjunction with EN 1363-1:2012.

This document does not examine the risk of fire spread as a result of thermal conduction along the piping or cabling installed in service ducts or shafts or thermal conduction through the media these pipes carry. It does not cover the risk of damage produced by thermal elongation or shortening of tubes and cables as a result of fire or damaged pipe suspensions. This document does not give guidance on how to test one, two or three sided service ducts or shafts.

NOTE Guidance on testing service ducts and shafts of less than four sides will be covered in the extended field of application rules being developed by CEN/TC 127.

This test applies to systems with boards and also for such systems with continuous covering with intumescent materials on the boards. It cannot be applied to systems where intumescent material is only applied in the range of the penetration.

This test is unsuitable for evaluating service ducts or shafts with internal barriers at walls and floors.

This test is unsuitable for evaluating fire protective systems for cable systems and associated components with maintenance of integrity in case of fire. This is covered by EN 1366-11: *Fire protective systems for cable systems and associated components*.

Whilst the walls of service ducts or shafts tested to this method provides specified levels of integrity or insulation, testing according this document does not replace the testing of the functional endurance of small electrical cables which is covered in EN 50200.

Fire resistance testing of ducts for air distribution systems is covered in EN 1366-1.

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 1363-1:2012, *Fire resistance tests — Part 1: General requirements*

EN ISO 898-1:2013, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread (ISO 898-1:2013)*

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 1363-1:2012, 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 <http://www.iso.org/obp>

3.1**service duct**

mainly horizontal duct enclosing combustible or non-combustible services, such as pipes or cables

3.2**service shaft**

mainly vertical shaft enclosing combustible or non-combustible services, such as pipes or cables

3.3**shutter of access opening**

openable door or panel allowing for access to the services within the duct or shaft

3.4**supporting construction**

wall, partition or floor which the duct or the shaft passes through in the test

3.5**boards**

rigid product of cross section in which the thickness is uniform and substantially smaller than the other dimensions of the installations

4 Test equipment**4.1 General**

In addition to the test equipment specified in EN 1363-1:2012, the following are required.

4.2 Furnace

[SIST EN 1366-5:2021](https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba-)

<https://standards.iteh.ai/catalog/standards/sist/22974319-f183-48c7-93ba->

The furnace shall be capable of subjecting service ducts and shafts to the standard heating and pressure conditions specified in EN 1363-1:2012 and shall be suitable for testing horizontal ducts (see Figure 1 and Figure 2) or vertical shafts (see Figure 3 and Figure 4).

4.3 Loading equipment

Continuous stranded steel cables and/or the installations used in practice are used to apply load to the bottom internal face of the service duct or shaft to represent service loading.

4.4 Gas extraction equipment (optional)

If for safety reasons, a laboratory requires to extract gases away from the open end of the duct or shaft, this shall not influence the test conditions.

5 Test conditions

5.1 Furnace

The heating and pressure conditions and the furnace atmosphere shall conform to those given in EN 1363-1:2012.

5.2 Loading

Horizontal service ducts shall be loaded when supporting service installations. In this case, the weight of the load shall be representative of that used in practice.

Vertical service shafts shall not be loaded except in the two following situations:

- when supporting service installations. In this case, the weight of the load shall be representative of that used in practice;
- when the service installation shaft is not supported on each floor or when the height between two supports is greater than 5 m. In this case a weight load representative for the additional shaft weight shall be added to the shaft top.

6 Test specimen

6.1 Size

6.1.1 General

Any cross section of duct or shaft may be tested as required by the sponsor.

6.1.2 Length

The minimum lengths of the parts of the test specimen inside and outside the furnace shall be as given in Table 1.

Table 1 — Straight length of test specimen

Orientation	Length m			
	Inside furnace		Outside furnace	
	fire outside	fire inside	fire outside	fire inside
Horizontal duct	≥ 4,0	0,25 ± 0,05	2,0 ± 0,05	2,0 ± 0,05
Vertical shaft ^a	≥ 2,0	0,25 ± 0,05	2,0 ± 0,05	2,0 ± 0,05
^a See also 5.2.				

The service ducts and shafts of the same construction type shall be tested with the maximum width and height and the minimum thickness as intended in practice.

6.2 Number

One test specimen shall be tested for each type of orientation, exposure conditions and cross-section.

6.3 Design

6.3.1 General

The test shall be made on a test specimen, representative of the complete service duct or shaft assembly, on which information is required.

6.3.2 Duct and shaft arrangement

6.3.2.1 General

The exposure condition (fire inside or fire outside) shall be as specified by the sponsor. Ducts shall therefore be arranged as shown in Figure 1 or Figure 2 and shafts shall be arranged as shown in Figure 3 or Figure 4. Service ducts or shafts with fire exposure from outside will have no openings in the furnace (except access panels). For service ducts or shafts exposed to an internal fire, the end of the service duct or shaft facing into the furnace shall be left open. No service ducts or service shafts shall contain anything other than the loading defined in 4.3.

If a cable outlet is part of the system, this cable outlet shall be tested with a distance to the penetration through the wall or floor not lower than intended in practice.

Where used in practice, each service duct or shaft shall incorporate one access opening as follows:

- fire outside: inside furnace at mid-span of two suspensions;
- fire inside: as shown in Figure 2 (the dimensions may be applied also to vertical shafts).

For the test, the access opening shall be at the bottom of the duct except the access opening is in practice only on a side or on the top. In this case, the access opening shall be installed as in practice. The width and height of the access opening shall be representative of the maximum dimensions used in practice, the thickness shall be the minimum dimension used in practice.

Vertical shafts shall be arranged as shown in Figure 3 or Figure 4 and shall penetrate through the furnace roof slab/supporting construction. The shafts shall be supported at the furnace roof level as they would be supported in practice when penetrating a floor (as specified by the sponsor).

6.3.2.2 Joints in horizontal service ducts

For the fire test with fire from outside, the test configuration shall include at least one joint inside and at least one joint outside the furnace. There shall be at least one joint for every layer, both inside and outside the furnace.

For the fire test with fire from inside, these rules only apply for the part of the specimen outside the furnace.

Outside the furnace, the joint in the outer layer of the fire protection material shall be recorded and it may not be within 100 mm of thermocouples T2 in accordance with 9.1. Inside the furnace, the joint in the outer layer of fire protection material shall be located at approximately mid-span. The location of joints in inner layers shall be as specified by the sponsor.

The distance between joints and suspension devices shall not be less than that used in practice. If the minimum distance has not been specified, suspension devices shall be arranged so that the joint at mid-span lies midway between them. Distances between the suspension devices shall be specified by the sponsor and shall be representative of practice.