



# SLOVENSKI STANDARD SIST EN 1366-5:2003

01-november-2003

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## 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

Essais de résistance au feu des installations de service - Partie 5: Gaines pour installation technique

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Ta slovenski standard je istoveten z: **EN 1366-5:2003**

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### 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

**SIST EN 1366-5:2003**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 1366-5**

August 2003

ICS 13.220.50

English version

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

Essais de résistance au feu des installations de service -  
Partie 5: Gaines pour installation technique

Feuerwiderstandsprüfungen für Installationen - Teil 5:  
Installationskanäle und -schächte

This European Standard was approved by CEN on 27 June 2003.

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**EN 1366-5:2003 (E)****Foreword**

This document (EN 1366-5:2003) has been prepared by Technical Committee CEN/TC 127, "Fire safety in buildings", 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of an identical text or by endorsement, at the latest by February 2004, and conflicting national standards shall be withdrawn at the latest by February 2004.

This document includes a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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.

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## Introduction

The purpose of this test is to measure the ability of a representative 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 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 that there is a possibility that toxic and/or harmful smoke and gases may be evolved 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.

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**EN 1366-5:2003 (E)****1 Scope**

This Part of EN1366 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 examines the behaviour of ducts and shafts exposed to fire from outside and from inside the duct. This standard is read in conjunction with EN 1363-1.

This standard does not examine the risk of fire spread as a result of thermal conduction along the piping 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 as a result of fire, or damaged pipe suspensions. This standard 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 is unsuitable for evaluating service ducts with internal barriers at walls and floors.

Whilst the walls of service ducts or shafts tested to this method may provide specified levels of integrity or insulation, testing to this standard 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.

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### 2 Normative references (standards.iteh.ai)

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

EN 1363-1:1999, *Fire resistance tests – Part 1: General requirements*.

EN 50200, *Method of test for resistance to fire of unprotected small cables for use in emergency circuits*.

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs (ISO 898-1:1999)*.

EN ISO 13943:2000, *Fire safety – Vocabulary (ISO 13943:2000)*.



### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1363-1:1999 and EN ISO 13943:2000 and the following apply.

#### 3.1

##### **service ducts**

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

#### 3.2

##### **service shafts**

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

#### 3.3

##### **shutter of access openings**

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 passes through in the test

### 4 Test equipment

#### 4.1 General

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

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#### 4.2 Furnace

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

#### 4.3 Loading equipment

Stranded steel cables are used to apply load to the bottom internal face of the service duct to represent service loading, or any other equivalent equipment.

#### 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.

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## 5.2 Loading

Horizontal service ducts shall be loaded when supporting service installations. In this case, 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 load shall be representative of that used in practice;
- when the service installation shaft is not fixed to each floor. In this case, an over load representative of the over weight shall be added.

## 6 Test specimen

## 6.1 Size

## 6.1.1 General

Any size of duct or shaft may be tested as required by the sponsor. However, sizes other than those in Tables 1 and 2 may have restricted direct field of application.

## 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.

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**Table 1 — Minimum length of test specimen**

Orientation	Minimum length (m)			
	Inside furnace		Outside furnace	
	fire outside	fire inside	fire outside	fire inside
Horizontal duct	4,0	0,25	2,0	2,5
Vertical shaft	2,0	0,25	2,0	2,0

## 6.1.3 Cross-section

The standard sizes of duct and shaft shall be as given in Table 2.

**Table 2 — Cross-section of test specimen**

Exposure conditions	Width (mm)	Height (mm)
Fire inside	1000 ± 10	500 ± 10
Fire outside size (i)	200 ± 10	200 ± 10
size (ii)	1000 ± 10	500 ± 10

## 6.2 Number

One test specimen shall be tested for each type of orientation, exposure conditions and cross section (see Table 2).

## 6.3 Design

### 6.3.1 General

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

### 6.3.2 Duct and shaft arrangement

Ducts shall be arranged as shown in Figures 1 and 2 and shafts shall be arranged as shown in Figures 3 and 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 duct facing into the furnace shall be left open. No ducts or shafts shall contain anything other than the standard cables for loading. The exposure condition (fire inside or fire outside) shall be as specified by the sponsor.

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

- Fire outside: inside furnace at mid-span of exposed section of duct.
- 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. The size of the access opening shall be representative of practice.

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

#### 6.3.2.1 Joints in horizontal ducts

The test configuration shall include at least one joint inside the furnace and at least one joint outside it. There shall be at least one joint for every layer of fire protection material, both inside and outside the furnace and in any steel duct.

Outside the furnace, the joint in the outer layer of the fire protection material shall be no further than 700 mm from the supporting construction and no nearer than 100 mm to thermocouples T2. 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. Centres of the suspension devices shall be specified by the sponsor and shall be representative of practice.

#### 6.3.2.2 Joints in vertical service shafts

For the vertical shaft exposed to fire from inside, the test configuration shall include at least one joint inside the furnace and one joint outside it. There shall be at least one joint for every layer of fire protection material, both inside and outside the furnace and in any steel duct.

Outside the furnace, the joint in the outer layer of the fire protection material shall be no further than 700 mm from the supporting construction and no nearer than 100 mm to thermocouples T2. Inside the