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**Električni kabli - Preskus požarne odpornosti za nezaščitene električne kable  
(klasifikacija P)**

Electric cables - Fire resistance test for unprotected electric cables (P classification)

Kabel und Leitungen - Feuerwiderstandsprüfung an ungeschützten Kabeln und  
Leitungen (P-Klassifikation)Câbles électriques - Essai de résistance au feu des câbles électriques non protégés  
(Classification P)**iTeh STANDARD PREVIEW****(standards.itteh.ai)**[SIST EN 50577:2016](https://standards.itteh.ai/catalog/standards/sist/3af624d2-dec8-411c-980a-aa9597dad7b/sist-en-50577-2016)**Ta slovenski standard je istoveten z: EN 50577:2015**<https://standards.itteh.ai/catalog/standards/sist/3af624d2-dec8-411c-980a-aa9597dad7b/sist-en-50577-2016>**ICS:**

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
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29.060.20	Kabli	Cables
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EUROPEAN STANDARD

**EN 50577**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2015

ICS 13.220.50; 29.060.20

English Version

**Electric cables - Fire resistance test for unprotected electric cables (P classification)**

Câbles électriques - Essai de résistance au feu des câbles électriques non protégés (Classification P)

Kabel und Leitungen - Feuerwiderstandsprüfung an ungeschützten Kabeln und Leitungen (P-Klassifikation)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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EN 50577:2015 (E)

## European foreword

This document (EN 50577:2015) has been prepared by CLC/TC 20 "Electric cables".

The following dates are fixed:

- latest date by which this document has (dop) 2016-11-02 to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national (dow) 2018-11-02 standards conflicting with this document have to be withdrawn

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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

The cables are tested in a standardized representative installation, under conditions of minimum bending radius and subject to exposure to fire under conditions of the EN 1363-1 standard time/temperature curve which satisfies the requirements of Mandate M/117 for the P classification.

NOTE The test method in EN 50200 includes exposure to fire under specified conditions of constant temperature attack and satisfies the requirements of Mandate M/117 for the PH classification.

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## Introduction

The purpose of this test is to evaluate the ability of an electric cable to maintain electrical circuit integrity during a defined time whilst exposed to fire under conditions of the EN 1363-1 standard time/temperature curve and when installed in a standardized representative condition.

The fire exposure conditions and general arrangement in this European Standard are similar to those given in prEN 1366-11 [1], developed by CEN/TC 127, and a future document on Cable management systems (CMS) for fire resistant installations, to be developed by CLC/TC 213 [2]. Each of these standards has been developed under a Mode 4 co-operation between CEN/TC 127, CLC/TC 213 and CLC/TC 20.

The test installation has been designed such that vertical and horizontal furnaces can be used to carry out the test.

The standardized representative condition can be arranged in the following configurations:

- a) a “U” or “S” in the horizontal furnace;
- b) a “U” and “S” in the horizontal furnace and
- c) a “U” in the vertical furnace.

**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, electrical and operational hazards may also arise during the construction of the test elements or structures, their testing and the 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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## 1 Scope

This European Standard specifies a test method to evaluate the maintenance of circuit integrity of electric cables which have intrinsic resistance to fire under fire conditions, in order to classify the electric cable according to EN 13501-3.

The test determines the survival time for circuit integrity of the electric cable when exposed to fire under the conditions of the EN 1363-1 standard time/temperature curve.

This European Standard is used in conjunction with EN 1363-1.

This European Standard applies to electric power and control cables with rated voltage up to and including 600/1 000 V.

The cable is tested in a standardized representative installation condition.

The test does not assess the performance of the cable management system.

NOTE Optical fibre cables and copper communication cables could be tested using this test method, however verification procedures for such cables were still under development when this document has been circulated for vote (2015-07-24).

This European Standard includes field of direct application (Annex A) and rules for extended application of test results (EXAP) (Annex B).

The selection of cables to be tested for classification of a family is given in Annex B. In case the selection of the cables does not comply with Annex B, the test results are only applicable to the tested cables.

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## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 13501-3, *Fire classification of construction products and building elements — Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers<sup>1)</sup>*

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

EN 61537, *Cable management — Cable tray systems and cable ladder systems (IEC 61537)*

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

<sup>1)</sup> EN 13501-3 will be amended to include cables



IEC 60269-3, *Low voltage fuses — Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar applications) – Examples of standardized systems of fuses A to F*

### 3 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.

#### 3.1

##### **circuit integrity**

ability of an electric cable to continue to operate in a designated manner whilst subjected to a specific source of heat for a specified period of time under specified conditions

#### 3.2

##### **standardized representative installation**

cable management system based on perforated trays and perforated suspension supports

#### 3.3

##### **cable with intrinsic fire resistance**

electric cable designed to continue to operate in a designated manner whilst subjected to a specific source of heat for a specified period of time under specified conditions

#### 3.4

##### **rated voltage**

reference voltage for which the cable is designed

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### 4 Test equipment

#### 4.1 Test furnace

The test furnace shall be capable of subjecting the electric cable when installed to the standard heating and pressure conditions specified in EN 1363-1.

The internal dimensions of the test furnace shall be able to accommodate the standardized representative installation as specified in 4.4.

NOTE 1 Furnaces of the following minimum internal dimensions have been found to be suitable:

- 3 m long;
- 1,5 m deep;
- 2,5 m high.

It is acceptable to extend the vertical furnace to achieve the above minimum internal dimensions that have been found to be suitable.

NOTE 2 The typical dimensions of a horizontal furnace is 4 m (length) x 3 m (width) x 2,5 m (height) and of a vertical furnace, including any necessary extensions, 3 m (length) x 1,5 m (depth) x 2,5 m (height)

The centreline of burners shall be at least 500 mm away from the closest portion of the standardized representative installation.

#### 4.2 Continuity and voltage withstand checking arrangement (See Figure 15)

The arrangement for checking continuity and voltage withstand shall comprise a three-phase star-connected or single-phase transformer(s).

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During the test a current for continuity checking shall be passed through all conductors of the test sample. This shall be provided by a three phase star connected or single phase transformer(s) of sufficient capacity to maintain the test voltage up to the maximum leakage current allowable.

Consideration should be taken of the fuse characteristics when determining the power rating of the transformer.

The current shall be achieved by connecting one end of the sample to the transformer and the other end of the sample to a suitable load and an indicating device (e.g. lamp) to each conductor, or group of conductors.

NOTE 1 A current of approximately 0,25 A at the test voltage through each conductor or group of conductors is suitable at the beginning of the test.

NOTE 2 The voltage applied during the test is the rated voltage of the cable (subject to a minimum a.c. voltage of 100 V).

### 4.3 Fuse

Fuses used in the test procedure in 7.3 shall be 2 A Type DII complying with IEC 60269-3. Alternatively, a circuit breaker with equivalent characteristics may be used.

Where a circuit breaker is used, its equivalent characteristics shall be demonstrated by reference to the characteristic curve shown in the relevant annex of EN 50200.

### 4.4 Standardized representative installation

#### 4.4.1 General

The cables to be tested shall be installed in the standardized representative installation described in the following subclauses. The standardized representative installation shall be assembled and installed according to the manufacturer's instructions.

#### 4.4.2 System components

The system components used shall comply with EN 61537 and shall be based on the following:

##### 4.4.2.1 Cable tray

Material:	galvanized steel
Thickness:	(1,5 ± 0,15) mm
Perforation in base:	(15 ± 5) %
Width:	(400 ± 20) mm
Side wall height:	(60 ± 5) mm
Safe working load (SWL):	200 N/m

##### 4.4.2.2 Suspensions and horizontal supports (U-shaped and perforated)

Material:	galvanized steel
Cross section:	(220 ± 10) mm <sup>2</sup>
Safe working load:	10 kN (Tensile Strength)

##### 4.4.2.3 90-degree fittings

Material:	galvanized steel
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The 90-degree fittings shall be taken from the same system as the cable tray.

The 90-degree fittings taken from the same system as the perforated cable tray can be perforated or non-perforated. In case of non perforated fittings, holes should be drilled for attaching the steel chains.

#### 4.4.2.4 Right-angled brackets

Material: steel

The right-angled brackets shall be attached to the side walls of the cable tray, outside the furnace, in order to prevent any excessive movement inwards.

#### 4.4.3 Loading

Steel chains shall be used of the following specification to ensure that the load on the standardized installation system is uniformly distributed to the maximum working load:

Material: uncoated mild steel

Size: links can be any size

Unit weight: approximately 3,5 kg/m to 4,0 kg/m

#### 4.4.4 General arrangements of installation in furnace

The assembly shall be installed into either a horizontal or a vertical furnace as shown in the following general arrangements (Figures 1, 2, 3 and 4).

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