
Elektroenergetski, krmilni in komunikacijski kabli - Kabli za splošno uporabo za gradbena dela glede na zahteve za odpornost proti požaru

Power, control and communication cables - Cables for general applications in construction works subject to reaction to fire requirements

Starkstromkabel und -leitungen, Steuer- und Kommunikationskabel - Kabel und Leitungen für allgemeine Anwendungen in Bauwerken in Bezug auf die Anforderungen an das Brandverhalten

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Câbles d'énergie, de commande et de communication - Câbles pour applications générales dans les ouvrages de construction soumis aux exigences de réaction au feu

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[SIST EN 50575:2014](#)

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Foreword

This document (EN 50575:2014) has been jointly prepared by CLC/TC 20 "Electric cables", CLC/TC 46X "Communication cables" and its sub-committees and CLC/TC 86A "Optical fibres and optical fibre cables".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-08-11
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-08-11

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For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Performance characteristics other than those covered by the standard may be subject to the provisions of other relevant directives and Regulations, for example the Low Voltage directive (2006/95/EC).

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1 Scope

This European Standard specifies reaction to fire performance requirements, test and assessment methods for electric cables used for the supply of electricity and for control and communication purposes, which are intended for use in construction works and subject to performance requirements on reaction to fire.

The cables covered by this standard are intended to be used for the supply of electricity and communications in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke.

Cables intended to be used for the supply of electricity, communication, and fire detection and alarm in buildings and other civil engineering works where it is essential to assure the continuity of power and/or signal supply of safety installations such as alarm, way guidance and fire fighting installations are not covered by this standard.

NOTE This European Standard does not replace the electrical, mechanical and environmental requirements that are essential to demonstrate compliance with other applicable cable standards/specifications.

This European Standard covers:

- power cables – insulated conductors and cables for use in, e.g. the supply of electricity;
- control and communication cables – wires, symmetric cables, and coaxial cables with metallic conductors for use in, e.g. telecommunication, data transmission, radio frequency, video communication and signalling and control equipment;
- optical fibre cables – for use in, e.g. telecommunication, data transmission, radio frequency, video communication and signalling and control equipment.

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 13501-6, *Fire classification of construction products and building elements — Part 6: Classification using data from reaction to fire tests on electric cables*

EN 50399, *Common test methods for cables under fire conditions — Heat release and smoke production measurement on cables during flame spread test — Test apparatus, procedures, results*

EN 60332-1-2, *Tests on electric and optical fibre cables under fire conditions — Part 1-2: Test for vertical flame propagation for a single insulated wire or cable — Procedure for 1 kW pre-mixed flame (IEC 60332-1-2)*

EN 60754-2, *Test on gases evolved during combustion of materials from cables — Part 2: Determination of acidity (by pH measurement) and conductivity (IEC 60754-2)*

EN 61034-2, *Measurement of smoke density of cables burning under defined conditions — Part 2: Test procedure and requirements (IEC 61034-2)*

EN ISO 1716, *Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value) (ISO 1716)*

3 Terms and definitions

For the purposes of this document the terms and the definitions given in EN 13501-6, EN 60754-2, EN 50399, EN 60332-1-2, EN 61034-2 and EN ISO 1716 and the following apply.

3.1

electric cable

all power, control and communication cables, including optical fibre cables and hybrid cables which are a combination of two or more of these cable types

3.2

power cable

assembly comprising one or more insulated conductor(s), together with any coverings and protective layers, used for the transmission or supply of electrical energy

3.3

control cable

assembly comprising insulated conductors, together with any coverings and protective layers, used for the transmission of control, measuring and indication signals in electric installations

3.4

communication cable

assembly of suitably insulated coaxial conductors or twisted pairs of insulated conductors fabricated to meet transmission, mechanical and environmental requirements, and sufficient to allow conveyance of information between two points with the minimum of radiation

3.5

optical fibre cable

assembly comprising one or more optical fibres or fibre bundles inside a common covering designed to protect them against mechanical stresses and other environmental influences while retaining the transmission quality of the fibres

Note 1 to entry:

May also contain metallic conductors.

[SOURCE: IEC 731-04-01]

3.6

product family

group of products produced by one manufacturer for which the test results for one or more characteristics from one product within the family are considered to be representative for that same characteristic for all other products within this family

4 Product characteristics

4.1 Reaction to fire

The contribution of power, control and communication cables to the development of fire shall be verified according to the test methods relevant for the claimed class as indicated in Clause 5.

Test results shall be classified according to EN 13501-6.

The contribution to the development of fire is classified regarding gross calorific potential, flame spread, total heat release, peak heat release rate and Fire Growth Rate Index (FIGRA) and is completed by additional classifications regarding smoke production, flaming droplets/particles and acidity.

4.2 Release of dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when products covered by this standard are placed on those markets. In the

absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through:
<http://ec.europa.eu/enterprise/construction/cpd-ds/>

5 Test methods for reaction to fire classes

Table 1 gives the reference to the European Standard containing the test methods to be used for the corresponding reaction to fire class.

Table 1 — Test methods for reaction to fire classes

Class	Test methods				
	EN ISO 1716	EN 50399 ^a	EN 60332-1-2	EN 61034-2 ^c	EN 60754-2 ^{c,d}
A_{ca}	X	-	-	-	-
B1_{ca}	-	X ^b	X	X	X
B2_{ca}	-	X	X	X	X
C_{ca}	-	X	X	X	X
D_{ca}	-	X	X	X	X
E_{ca}	-	-	X	-	-
F_{ca}	No performance determined				

^a EN 50399 contains all the information previously referred to as FIPEC₂₀ Scenario 1 and FIPEC₂₀ Scenario 2.
^b Special conditions of test apply in EN 50399 to Class B1_{ca}.
^c Additional classification tests.
^d EN 60754-2 contains all the information previously contained in EN 50267-2-3.

6 Assessment and verification of constancy of performance - AVCP

6.1 General

The compliance of power, control and communication cables with the requirements of this European Standard and with the performance (including classes) declared by the manufacturer in the Declaration of Performance (DoP) shall be demonstrated by:

- determination of the product-type,
- factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance.

6.2 Type testing

6.2.1 General

All performances related to characteristics included in this European Standard shall be determined when the manufacturer intends to declare the respective performances except where the standard gives provisions for declaring them without performing tests (e.g. use of previously existing data).

Where applicable the Extended Application (EXAP) rules given in CLC/TS 50576 should be applied for the selection of suitable representative samples and applicability of test results to cables other than those tested.

Assessment previously performed in accordance with the provisions of this European Standard may be taken into account providing that they were made to the same test method, under the same AVCP system on the same product or products of similar design, construction and functionality such that the results are applicable to the product in question.

NOTE Same AVCP system means testing by, or testing witnessed or supervised by, an independent third party for products covered by system 1+ and 3, under the responsibility of a product certification body for products covered by system 1+.

For the purpose of reaction to fire assessment, the manufacturer's products may be grouped into product families, where it is considered that the results for one or more characteristics from any one cable within the product family are representative for that same characteristic for all cables within that same product family.

In addition, the determination of product-type shall be performed for all characteristics included in the standard for which the manufacturer declares performances:

- at the beginning of the production of a new or modified power, control and communication cable type (unless a member of the same product family); or
- at the beginning of a new or modified method of production (where this may affect the declared performance); or

they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the power, control and communication cable design, in the raw material or in the supplier of the components, or in the method of production (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Products bearing regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances declared in the DoP, although this does not replace the responsibility on the power, control and communication cables manufacturer to ensure that the power, control and communication cables as a whole is correctly manufactured and have the declared performance values.

6.2.2 Test samples, testing and compliance criteria

For power, control and communication cables to be tested/assessed with regard to reaction to fire, as indicated in 4.1, the test methods are given in Clause 5 for the relevant claimed class and EN 13501-6 gives the number of samples to be tested and the criteria for expressing the test results.

6.2.3 Test reports

The results of the determination of the product-type shall be documented in test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the power, control and communication cables to which they relate.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.

The FPC system shall consist of procedures, regular inspections, tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product constancy, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product constancy problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory, the manufacturer may delegate the action to a person having the necessary authority to:

- identify procedures to demonstrate constancy of performance of the product at appropriate stages;
- identify and record any instance of non-constancy;
- identify procedures to correct instances of non-constancy.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

- a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;
- b) the effective implementation of these procedures and instructions;
- c) the recording of these operations and their results;
- d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-constancy of performance.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

A manufacturer who subcontracts all of his activities may in no circumstances pass these responsibilities on to a subcontractor.

NOTE Manufacturers having an FPC system which complies with EN ISO 9001 standard and which addresses the requirements of this European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance.

6.3.2.4 Traceability and marking

Individual cable batches shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions, appropriate to the particular manufacturing process.

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics that he declares are maintained. The characteristics, and the means of control, are:

- reaction to fire characteristics shall be subject to the tests indicated in Clause 5 at least once per year. Only one product sample shall be selected from each product family.

The test frequency may be reduced subject to the provisions of 6.3.3.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.