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Kraft-, styr-, tele- och datakablar – Brandegenskaper – Utvidgad tillämpning av provningsresultat

*Electric cables –
Extended application of test results for reaction to fire*

Som svensk standard gäller europastandarden EN 50576:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50576:2022.

Nationellt förord

Standarden ska användas tillsammans med SS-EN 50575.

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English Version

Electric cables - Extended application of test results for reaction to fire

Câbles électriques - Application étendue des résultats d'essai pour la réaction au feu

Kabel und Leitungen - Erweiterte Anwendung von Prüfergebnissen bezüglich Brandverhalten

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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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 50576:2022) has been prepared by CLC/TC 20 "Electric 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) 2023-12-12
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2025-12-12

This document supersedes CLC/TS 50576:2016 and all of its amendments and corrigenda (if any).

EN 50576:2022 includes the following significant technical changes with respect to CLC/TS 50576:2016:

- Inclusion of EXAP rule for single core unsheathed power cables with a diameter of less than or equal to 5,0 mm [8];
- simplification of the choice of samples to the EXAP rule for EN 60332-1-2 for classes B_{2ca}, C_{ca} and D_{ca} for electric cables;
- simplification of the choice of samples due to the changes in the test standard to the EXAP rule for EN 61034-2;
- implementation of a direct application rule for EN 60754-2;
- improvement of d_{min} to the Table 2.

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

This document is read in conjunction with EN 50575 in order to evaluate the reaction to fire performance of power, control and communication cables.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

The original project “CEMAC – CE marking of cables” was carried out over a three-year period. It brought together cable manufacturers, research and testing laboratories, and research establishments in creating the technical background and developing rules and procedures for extended application of test results (EXAP). More than 200 tests to EN 50399 on more than 100 cables were carried out as part of the project. The final report [1] was published in 2010 and the EXAP rules and procedures developed by the CEMAC project have been used as the basis for this document.

A specific EXAP procedure and rules based on the use of safety margins and a cable parameter derived from the extensive CEMAC tests was developed for the most common generic types of power cables used in the European market.

A general EXAP procedure and rules based upon a statistical treatment of the actual test results obtained from a cable family was also developed for any power cables. However, the use of this general procedure and rules will generally require more tests to be carried out than the use of the specific procedure and rules.

Since the CEMAC project report was completed in 2010, the project has been extended to further investigate the performance of optical fibre cables and rules and procedures developed for extended application of test results for these products. An additional report [2] was published in 2015 and the EXAP rules and procedures developed by the further CEMAC project work was used as the basis for CLC/TS 50576:2016.

Since 2016, the project has been extended to further investigate the performance of communication cables and rules and procedures developed for extended application of test results for these products. The work [7] was published in 2016 and has been included in this document.

In addition, this edition includes editorial improvements and re-arrangements.

General guidance on direct and extended application can be found in CEN/TS 15117 [3].

1 Scope

This document describes the procedure and rules for extended application of results of tests carried out according to the test methods described in EN 50399, EN 60332-1-2 and EN 61034-2.

The EXAP rules described apply to EN 50399 test results used for classification according to EN 13501-6 in classes B2_{ca}, C_{ca} and D_{ca}, additional smoke production classes s1, s2 and s3 and flaming droplets/particles, to EN 60332-1-2 test results used for classification in classes B2_{ca}, C_{ca}, D_{ca} and E_{ca} and to EN 61034-2 test results used for classification in classes s1a and s1b.

No EXAP procedure and rules have been developed in respect to the results of tests carried out according to the test method described in EN 60754-2. As the parameters (pH and conductivity) for each cable in a family are determined based upon calculation using material test results, this is considered as a matter of direct application. Material test results taken from any one sample of finished cable from a family are sufficient to calculate the parameters for each cable in the family.

Cables with a diameter of 5,0 mm or less are expected to be tested as bundles according to EN 50399. Cables with a diameter of less than or equal to 5,0 mm are included in the specific and general EXAP rules for single core unsheathed power cables only. The rules apply to circular and non-circular cables provided that they fall within the scope of the relevant test method.

A specific EXAP rule has been developed for any of the types of electric cable families as defined in this document. A general EXAP rule has been developed for all electric cable families unless otherwise stated elsewhere in this document.

NOTE 1 Multicore power cables are sometimes referred to as control cables with a rated voltage but for the purposes of this document are considered as power cables. For multipair, multitruple and multiquad control cables, either the general EXAP rule or the specific EXAP rule for power cables or the specific EXAP rule for communication cables can be applied.

The use of the specific EXAP rule gives benefit in the lower number of cables to be tested for a range of cable constructions (product family).

An EXAP is only possible when cables belong to a family as defined in this document.

NOTE 2 For the purposes of this document, the term "electric cables" also covers optical fibre cables.

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 13501-6, *Fire classification of construction products and building elements - Part 6: Classification using data from reaction to fire tests on power, control and communication 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)*