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Preskusne zahteve za pribor, ki se uporablja na elektroenergetskih kablji z naznačeno napetostjo od 3,6/6(7,2) kV do vključno 20,8/36(42) kV - 3. del: Prehodne spojke med kablji z impregnirano papirno izolacijo in kablji z ekstrudirano izolacijo

Test requirements for accessories for use on power cables of rated voltage from 3,6/6 (7,2) kV up to 20,8/36(42) kV - Part 3: Transition joints between cables with impregnated paper insulation and cables with extruded insulation

Prüfanforderungen für Kabelgarnituren für Starkstromkabel mit einer 12 Nennspannung von 3,6/6(7,2) kV bis 20,8/36(42) kV 13 Teil 3: Übergangsmuffen für Kabel mit massegetränkter Papierisolierung 14 und für Kabel mit extrudierter Kunststoffisolierung

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Exigences relatives aux essais des accessoires des câbles d'énergie pour des tensions assignées de 3,6/6(7,2) kV à 20,8/36(42) kV - Partie 3: Jonctions mixtes entre les câbles isolés au papier imprégné et les câbles à isolation extrudée

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Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV - Part 3: Transition joints between cables with impregnated paper insulation and cables with extruded insulation

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This Harmonization Document was approved by CENELEC on 2023-12-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document at national level.

Up-to-date lists and bibliographical references concerning such national implementations may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

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European foreword

This document (HD 629.3 S1:2024) has been prepared by the 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) 2024-12-11
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-12-11

This document partially supersedes HD 629.2 S2:2006 and all of its amendments and corrigenda (if any).

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.

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.

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Introduction

This document defines requirements and tests which can be called up for transition joints, when used between extruded insulated power cables and impregnated paper insulated power cables covered by HD 620 and HD 621 or another relevant standard.

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HD 629.3 S1:2024 (E)

1 Scope

1.1 General

This document specifies performance requirements for type tests for transition joints for use between extruded insulated power cables as specified in HD 620 and impregnated paper insulated power cables as specified in HD 621 or another relevant standard.

Once type test for an accessory is successfully completed, it is not necessary to repeat the test, unless changes are made in the materials, design or manufacturing process, which might affect the performance characteristics.

Possible extra thermo-mechanical forces due to high current loads from renewable sources of power generation are not covered by these tests (under consideration).

Accessories for special applications such as submarine cables, ships cables or hazardous situations (explosive environments, fire resistant cables or seismic conditions) are not included.

Test methods are included in EN IEC 61442:— and Annex E.

NOTE 1 This document does not invalidate existing approvals of products achieved on the basis of national standards and specifications and/or the demonstration of satisfactory service performance. However, products approved according to such national standards or specifications cannot directly claim approval to this document.

NOTE 2 It might be possible, subject to agreement between supplier and purchaser, and/or the relevant conformity assessment body, to demonstrate that conformity to the earlier standard can be used to claim conformity to this document, provided an assessment is made of any additional type testing that might need to be carried out. Any such additional testing that is part of a sequence of testing cannot be done separately.

1.2 Type of accessories

The accessories covered by this document are straight and branch transition joints of all designs, suitable for use underground or in air.

1.3 Rated voltage

The rated voltages U_0/U (U_m) of the accessories covered by this document are 3,6/6(7,2) - 3,8/6,6(7,2) - 6/10(12) - 6,35/11(12) - 8,7/15(17,5) - 12/20(24) - 12,7/22(24) - 18/30(36) - 19/33(36) - 20,8/36(42) kV.

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 IEC 61238-1-3, *Compression and mechanical connectors for power cables - Part 1-3: Test methods and requirements for compression and mechanical connectors for power cables for rated voltages above 1 kV ($U_m = 1,2$ kV) up to 36 kV ($U_m = 42$ kV) tested on non-insulated conductors $U_m = 1,2$ kV up to 36 kV ($U_m = 42$ kV) tested on non-insulated conductors*

EN IEC 61442:—¹, *Test methods for accessories for power cables with rated voltages from 6 kV ($U_m = 7,2$ kV) up to 36 kV ($U_m = 42$ kV) (IEC 61442:2023)*

HD 620 S2, *Distribution cables with extruded insulation for rated voltages from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV*

¹ To be published. Stage at the time of publication: FprEN IEC 61442:2023.

HD 621 S1, *Medium voltage impregnated paper insulated distribution cables*

HD 629.1 S3, *Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV - Part 1: Accessories for cables with extruded insulation*

IEC 60050-461, *International Electrotechnical Vocabulary - Chapter 461: Electric cables*

3 Definitions

For the purposes of this document, the terms and definitions given in IEC 60050-461 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

connector

device for connecting a conductor to an equipment terminal or for connecting two or more conductors to each other

[SOURCE: EN IEC 61238-1-3]

3.2

joint

accessory suitable for use in air or underground which makes a connection between two or more insulated power cables to form a continuous circuit

3.3

type I joint

joint suitable for use where an impact resistance withstand is not required

3.4

type II joint

joint which has an impact resistance withstand in accordance with this document

3.5

R category joint

joint which has an AC breakdown minimum performance after extended immersion period in water with combined water and conductor heating cycling tests

3.6

W category joint

joint which has an AC withstand minimum performance after extended immersion period in water with combined water and conductor heating cycling tests

3.7

Z category joint

joint not tested with the extended immersion period in water and combined water and conductor heating cycling tests

3.8

straight joint

accessory making a connection between two cables to form a continuous circuit

Note 1 to entry: For types of joint see 3.3 and 3.4.

[SOURCE: IEC 461-11-01]

HD 629.3 S1:2024 (E)**3.9****branch joint**

accessory making a connection of a branch cable to a main cable

Note 1 to entry: For types of joint see 3.3 and 3.4.

[SOURCE: IEC 461-11-17]

3.10**transition joint**

straight or branch joint making a connection between paper insulated cable and extruded cable

[SOURCE: IEC 461-11-04 modified]

3.11**trifurcating transition joint**

straight or branch joint making a connection between 3 core paper insulated cable and 3 separate single core extruded cables

3.12**radial field joint**

joint where the individual cores are screened throughout the joint

3.13**non-radial field joint**

joint which does not contain individual core screens

3.14**shelf life****storage life**

duration of the time interval components may be stored under specified conditions without changing any important properties

[SOURCE: IEC 212-13-15, modified]

3.15

rated power-frequency voltage between conductor and earth or metallic screen, for which the cable accessory is designed

3.16

U

rated power-frequency voltage between conductors for which the cable accessory is designed

3.17

U_m

maximum value of the 'highest system voltage' for which the cable accessory is designed

4 Current

The continuous current rating of a transition joint is in accordance with the operating temperature of the cable specified in HD 621 or other relevant cable standards and is suitable for operation at the rated current and under short circuit fault conditions at the temperatures stated therein

5 Components

5.1 Connectors

Connectors used within the accessory shall comply with EN IEC 61238-1-3, or with another relevant standard or specification when agreed between manufacturer/supplier. All connectors shall be identified in accordance with Annex B.

Where an accessory is to be installed with a different connector than that used for qualification, its compatibility and performance shall be verified.

Compliance is demonstrated with the connector used in the tests. For extension of compliance to other connectors refer to 7.2.

5.2 Materials

It is not a prerequisite for compliance with this document that any component material (resin, heat-shrink tubing etc.) should be subject to any form of individual type testing or fingerprinting.

Where required, monitoring of the ongoing suitability of component material supplies should be done by fingerprinting using the EN 50655 series.

If type testing of resins, pressure sensitive adhesive tapes and flexible insulating sleeveings for electrical purposes is required, reference should be made to the relevant standards produced by IEC/TC 15, which have been adopted by CENELEC, as listed for information in the bibliography.

The term "material characterization" is sometimes used in conjunction with both type testing and fingerprinting of component materials, but it is undefined, and its use should therefore be avoided.

6 Test assemblies

6.1 Identification

6.1.1 Cables

The cables used for testing shall comply with HD 620 S2 and/or HD 621 S1 or other relevant standards as applicable. Constructional details of the cables shall be identified (refer to A.1 and A.2).

Paper insulated cables used for the tests are sometimes issued from the field. It is recommended to check the quality of the insulation of the paper insulated cable (according to Annex D for example) prior to proceed to any test.

6.1.2 Connectors

Connectors used within the accessories shall be identified as in Annex B.

6.1.3 Accessories

The accessory that is installed shall be within its shelf life.

Accessories to be tested shall be correctly identified with respect to

- name of manufacturer/supplier,
- type, designation, manufacturing date or code, end of shelf life date,
- minimum and maximum nominal cross sections, material and shape of cable conductor as used in EN 60228 for conductors,
- minimum and maximum cable insulation diameters,