

SLOVENSKI STANDARD

SIST EN 50655-3:2018

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Nadomešča:

SIST HD 631.4 S1:2009

Električni kabli - Pribor - Značilnosti materialov - 3. del: Identifikacija materiala hladno skrčljivih komponent za uporabo v nizko- in srednenapetostnih sistemih do vključno 20,8/36 (42) kV

Electric cables - Accessories - Material characterization - Part 3: Fingerprinting for cold shrinkable components for low and medium voltage applications up to 20,8/36 (42) kV

iTeh STANDARD PREVIEW

Kabel und isolierte Leitungen - Garnituren - Materialcharakterisierung - Teil 3: Fingerprint-Prüfungen für kaltschrumpfende Komponenten für Nieder- und Mittelspannungsanwendungen bis 20,8/36 (42) kV

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Câbles électriques - Accessoires - Caractérisation des matériaux - Partie 3: Essais d'identification des composants rétractables à froid pour les applications basse et moyenne tension jusqu'à 20,8/36 (42) kV

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ICS:

29.035.20	Plastični in gumeni izolacijski materiali	Plastics and rubber insulating materials
29.060.20	Kabli	Cables

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EUROPEAN STANDARD

EN 50655-3

NORME EUROPÉENNE

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English Version

Electric cables - Accessories - Material characterization - Part 3: Fingerprinting for cold shrinkable components for low and medium voltage applications up to 20,8/36 (42) kV

Câbles électriques - Accessoires - Caractérisation des matériaux - Partie 3: Essais d'identification des composants rétractables à froid pour les applications basse et moyenne tension jusqu'à 20,8/36 (42) kV

Kabel und isolierte Leitungen - Garnituren - Materialcharakterisierung - Teil 3: Fingerprint-Prüfungen für kaltschrumpfende Komponenten für Nieder- und Mittelspannungsanwendungen bis 20,8/36 (42) kV

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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 50655-3:2017) 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) 2018-09-18
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-09-18

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 supersedes HD 631.4 S1:2008.

EN 50655 series will consist of the following:

- EN 50655-1, *Electric cables - Accessories - Material characterization - Part 1: Fingerprinting for resinous compounds*;
- EN 50655-2, *Electric cables - Accessories - Material characterization - Part 2: Fingerprinting for heat shrinkable components for low and medium voltage applications up to 20,8/36 (42) kV*;
- EN 50655-3, *Electric cables - Accessories - Material characterization - Part 3: Fingerprinting for cold shrinkable components for low and medium voltage applications up to 20,8/36 (42) kV*.

NOTE It has been assumed in the preparation of this document that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

WARNING This European Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

EN 50655-3:2017

1 Scope

This European Standard specifies the test methods and requirements for fingerprinting (as defined in 3.11) of cold shrinkable components intended to be used in cable accessories for low and medium voltage, as defined in EN 50393, HD 629.1 and HD 629.2.

Fingerprinting testing of materials does not have a mandatory link to type testing of accessories. It is regarded as a stand-alone test, but it may be carried out in combination with the accessory type tests.

Component basic functions can be conductive, stress control or stress grading, insulating, oil barrier, anti-tracking, external protection and sealing. Components are supplied as single layer items or as multi-layer items.

Components are generally supplied pre-expanded or with a system allowing expansion prior to installation.

NOTE Information on health and safety is given in Annex A.

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 50393, *Test methods and requirements for accessories for use on distribution cables of rated voltage 0,6/1,0 (1,2) kV*

EN ISO 11358-1, *Plastics - Thermogravimetry (TG) of polymers - Part 1: General principles (ISO 11358-1)*

HD 629.1, *Test requirements on 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: Cables with extruded insulation*

HD 629.2, *Test requirements on accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV - Part 2: Cables with impregnated paper insulation*

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

ISO 2781, *Rubber, vulcanized or thermoplastic - Determination of density*

3 Terms and definitions

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

3.1

cold shrinkable

property of an elastomeric component previously expanded to recover to its original shape at ambient temperature after removal of the means of support

3.2

cold shrinkable component

elastomeric extruded tubing or moulded part (single- or multi-layer) pre-expanded on a support or expanded prior to installation, which tends to recover to its original dimensions when the support is removed

3.3

multi-layer component

component that consists of minimum two or more different materials bonded together

3.4**conductive component**

component whose material has a defined electrical conductivity

3.5**stress control or stress grading component**

component whose material has defined electrical characteristics to control electrical field

3.6**insulating component**

component whose material has defined electrical characteristics to withstand electrical stress

3.7**oil barrier component**

component whose material has defined material characteristics to prevent migration of cable impregnation compound

3.8**anti-tracking component**

component whose material has defined material characteristics to resist formation of conductive paths by surface electrical activity

3.9**sealant component**

component which, when used in conjunction with cold shrinkable components, forms a barrier along interfaces. It can be in the form of mastic, putty, grease or adhesive

3.10**external protection component**

component providing protection against the environment

3.11**fingerprinting**

tests made to establish and subsequently confirm the properties of materials or components used in cable accessories

3.12**deviation**

variation of a property between the initial test values and test values measured on new samples at a later date

3.13**initial test**

tests made to establish the properties of materials or components used in cable accessories

3.14**mechanically assembled cold shrinkable components**

mechanical superposition of at least two cold shrinkable components on one support

3.15**support**

device that serves to retain a cold shrinkable component in its expanded state and that is removed to allow recovery

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4 Fingerprinting

4.1 General

Tests shall be carried out on cold shrinkable components as defined in Table 1.

4.2 Sampling

Samples for fingerprinting shall be taken from material stored under conditions prescribed by the supplier. The fingerprinting test on cold shrinkable components shall be carried out

- a) **either** as a stand-alone test. Samples used for the initial test shall be taken from material available with or without sealant as agreed between supplier and user,
- b) **or** in combination with an accessory type test. Samples used for the initial test shall be taken from the same batch as those used in the accessory type test with or without sealant. In the event that no material from the same batch is available, the samples used for the initial test shall be taken from material available as agreed between supplier and user.

4.3 Preparation and conditioning

Original components shall be individually prepared and conditioned in accordance with relevant test method conditions. For multi-layer components, the material samples shall be taken from individual layers.

4.4 Tests

Components shall be tested in accordance with the tests specified in Table 1.

4.5 Test report

The test report shall include the following data:

- 1) part number or identification;
- 2) name of supplier / manufacturer;
- 3) batch number and/or manufacturing date;
- 4) test methods and results;
- 5) copy of the technical data sheet (TDS) and material safety data sheet (MSDS), if any (refer to Annex A);
- 6) major test parameters, including conditioning and calibration;
- 7) expansion rate (mm/yy) of component.

Table 1 — Fingerprinting tests — Test methods and requirements

Material / Component property	Test method	Unit	Requirements	
			Deviation	Comments
Support dimensions: - Inner diameter - Outer diameter		mm mm	± 7,5 % ± 7,5 %	
Weight ^a		g	± 7,5 %	
Density ^c	ISO 2781	g/cm ³	± 5 %	For multi-layer components, each individual layer shall be measured.
Thermogravimetric analysis (TGA) ^{b c} Polymer: - Weight loss - Mean temperature Carbon black: - Weight loss - Mean temperature Filler: - Weight loss - Mean temperature	EN ISO 11358-1	% °C % °C % °C	± 10 % ± 15 K ± 10 % ± 15 K ± 10 % ± 15 K	For multi-layer components, each individual layer shall be measured.
<p>^a Components of mechanically assembled cold shrinkable component shall be weighed separately.</p> <p>^b Test sequence and conditions shall be clearly recorded in the test report. The same sequence and conditions shall be used when the test is re-conducted.</p> <p>^c Samples shall be taken from fully recovered components.</p>				