SLOVENSKI STANDARD
SIST EN 50655-2:2018

01-januar-2018

Nadomešča:
SIST HD 631.2 S1:2008
SIST HD 631.3 S1:2009

Električni kabli - Pribor - Značilnosti materialov - 2. del: Identifikacija materiala toplotno skrčljivih komponent za uporabo v nizko- in srednjenapetostnih sistemih do 20,8/36 (42) kV

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

Kabel und isolierte Leitungen - Garnituren - Materialcharakterisierung - Teil 2: Fingerprintprüfungen für wärmeschrumpfende Komponenten für Niederspannungs- und Mittelspannungsanwendungen bis 20,8/36 (42) kV

Câbles électriques - Accessoires - Caractérisation des matériaux - Partie 2: Essais d'identification des composants thermorétractables pour les applications basse tension et moyenne tension à 20,8/36 (42) kV

Ta slovenski standard je istoveten z: **EN 50655-2:2017**

ICS:

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

SIST EN 50655-2:2018 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50655-2

November 2017

ICS 29.035.20

Supersedes HD 631.2 S1:2007, HD 631.3 S1:2008

English Version

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

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Kabel und isolierte Leitungen - Garnituren - Materialcharakterisierung - Teil 2: Fingerprintprüfungen für wärmeschrumpfende Komponenten für Niederspannungs- und Mittelspannungsanwendungen bis 20,8/36 (42) kV

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

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Ref. No. EN 50655-2:2017 E

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European foreword

This document (*EN 50655-2:2017*) 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– latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2020-09-18

This document supersedes HD 631.2 S1:2007 and HD 631.3 S1:2008.

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.

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.

1 Scope

This European Standard specifies the methods and requirements for fingerprinting (as defined in 3.13) of heat shrinkable components intended to be used for electrical insulation and/or electrical insulation and mechanical protection in cable accessories for low and medium voltage, as defined in EN 50393, HD 629.1 and HD 629.2.

Fingerprinting 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 accessory type tests.

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 60684-2, *Flexible insulating sleeving - Part 2: Methods of test (IEC 60684-2)*

EN ISO 1183 (series), *Plastics - Methods for determining the density of non-cellular plastics (ISO 1183 series)*

EN ISO 11357-3, *Plastics - Differential scanning calorimetry (DSC) - Part 3: Determination of temperature and enthalpy of melting and crystallization (ISO 11357-3)*

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*

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
heat shrinkable
property of a polymeric component previously expanded to recover to its original shape when heated above an appropriate temperature

3.2
heat-shrinkable components
expanded polymeric extruded tubing or molded parts (single or multi-layer), which undergo thermally activated recovery when heated above an appropriate temperature

3.3
tubing
tube of heat shrink polymeric material cut to a predetermined length

3.4
wraparound sleeve
flat sheet of heat shrink polymeric material, which can be wrapped to form tubing

3.5
molded part
formed piece of heat shrink polymeric material shaped to fit a specific configuration

3.6
sealant/sealant component
component which, when used in conjunction with heat shrink components, forms a barrier along interfaces and that can be in the form of mastic, putty, grease or adhesive

Note 1 to entry: The sealant (for example hot melt adhesive or mastic) may be pre-coated on the heat shrink components or applied separately.

3.7
multi-layer component
component that consists of minimum two different materials bonded together

3.8
conductive component
component whose material has a defined electrical conductivity

3.9
stress control or stress grading component
component whose material has defined electrical characteristics to control electrical field

3.10
insulating component
component whose material has defined electrical characteristics to withstand electrical stress

3.11
oil barrier component
component whose material has defined material characteristics to prevent migration of cable impregnation compound

3.12
anti-tracking component
component whose material has defined material characteristics to resist formation of conductive paths by surface electrical activity

3.13
fingerprinting
tests made to establish and subsequently confirm the properties of materials or components used in cable accessories

3.14
deviation
variation of a property between the original values and values measured on new samples at a later date

3.15
initial test
tests made to establish the properties of materials or components used in cable accessories

4 Fingerprinting

4.1 General

Tests shall be carried out on heat 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 of heat 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 tests shall be taken from the same batch as those used in the accessory type test with or without sealant as agreed between supplier and user. In the event that no material from the same batch is available, the samples used for the initial tests shall be taken from material available as agreed between supplier and user.

4.3 Preparation and conditioning

After full recovery in an air-circulating oven at temperature and time as specified by the supplier, original components shall be individually prepared and conditioned in accordance with relevant test methods. For multi-layer components, the material samples shall be taken from individual layers.

4.4 Tests

Components shall be tested in accordance with the test methods 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) tests method and results;

5) major test parameters, including preparation, conditioning and calibration. These shall be in sufficient detail to enable the test to be exactly reproduced at a later date;

6) copy of technical data sheet (TDS) and material safety data sheet (MSDS).

Table 1 — Fingerprinting tests — Test methods and requirements

Material property	Test method	Unit	Requirements	
			Deviation	Comments
Dimensions after full recovery [a]	EN 60684–2			
- Inner diameter		mm	±10 %	
- Wall thickness				
< 1 mm		mm	±15 %	
≥ 1 mm		mm	±10 %	
Density	EN ISO 1183 series	g/cm^3	±5 %	Measured without sealant and for multi-layer each individual layer shall be measured
Differential scanning calorimetry (DSC) [b]	EN ISO 11357-3			
- Characteristic transition temperature		°C	±5 K	Measured without sealant and for multi-layer each individual layer shall be measured Characteristic transition temperatures are peak melting temperatures (T_{pm}) or peak crystallization temperatures (T_{pc}).