
Električni kabli – Pribor – Značilnosti materialov – 2. del: Fingerprinting in preskusi tipa za toplotno skrčljive sestavne dele za uporabo v nizkonapetostnih sistemih

Electric cables – Accessories – Material characterization – Part 2: Fingerprinting and type tests for heat shrinkable components for low voltage applications

ICS

English version

Electric cables - Accessories - Material characterization
Part 2: Fingerprinting and type tests for heat shrinkable components
for low voltage applications

(to be completed)

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This draft Harmonization Document is submitted to CENELEC members for CENELEC enquiry.
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It has been drawn up by Technical Committee CENELEC TC 20.

If this draft becomes a Harmonization Document, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

This draft Harmonization Document was established by CENELEC in three official versions (English, French, German).

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CENELEC

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This draft Harmonization Document was prepared by a task force under the direction of WG 11 of CENELEC TC 20, Electric cables. As agreed at the Setubal meeting (June 2004) it is submitted to CENELEC enquiry.

HD 631 is planned to have 4 parts:

Part 1: Fingerprinting and type tests for resinous compounds

Part 2: Fingerprinting and type tests for heat shrinkable components for low voltage applications

Part 3: Fingerprinting for heat shrinkable components for medium voltage applications from 3,6/6 (7,2) kV up to 20,8/36 (42) kV

Part 4: 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 Harmonized Document 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.

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1 Scope

This Harmonisation Document specifies the conditions and the requirements for a) type testing b) fingerprinting, as defined in 3.7 and 3.8, for heat shrinkable components intended to be used for electrical insulation or electrical insulation and mechanical protection in cable accessories for low voltage, as defined in EN 50393.

The components are normally supplied in the colour black.

NOTE 1 Requirements and test methods are based on existing European practice and experience.

NOTE 2 Information on health and safety is given in Annex A.

2 Normative references

The following referenced documents are indispensable for the application 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 50393 ¹⁾, *Test methods and requirements for accessories for use on distribution cables of rated voltage 0,6/1,0 (1,2) kV*

EN 60811-2-1, *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 2-1: Methods specific to elastomeric compounds – Ozone resistance, hot set and mineral oil immersion tests (IEC 60811-2-1)*

EN 60243-1, *Electric strength of insulating materials — Test methods — Part 1: Test at power frequencies (IEC 60243-1)*

EN 60296, *Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear (IEC 60296)*

HD 429, *Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials (IEC 60093)*

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

EN 1426, *Bitumen and bituminous binders - Determination of needle penetration*

EN 1465, *Adhesives. Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies (ISO 4587)*

EN ISO 62, *Plastics- Determination of water absorption (ISO 62)*

EN ISO 527-2, *Plastics- Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 868, *Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

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

EN ISO 1183 (series), *Plastic - Method for determining the density and relative density of non-cellular plastic (ISO 1183 series)*

ISO 8013, *Vulcanised rubber: determination of creep index under compression or shear*

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

ASTM E28-99(2004), *Standard test methods for softening point of resins derived from naval stores by ring-and-ball apparatus*

¹⁾ At draft stage.

3 Terms and definitions

3.1

heat shrink

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 tubings or moulded parts, which undergo thermally activated recovery when heated to 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

moulded part:

formed piece of heat shrink polymeric material shaped to fit specific configuration

3.6

sealant

material, which when used in conjunction with heat shrink components, forms a barrier along the interfaces

NOTE The sealant (for example holt melt or mastic) may be pre-coated on the heat shrink component or applied separately.

3.7

type test

test made on the material or component of a cable accessory in order to demonstrate satisfactory performance characteristics to meet the intended application

3.8

fingerprinting

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

3.9

deviation

variation of a property between the original values and values measured on new samples later on

4 Fingerprinting

The samples used for the initial tests shall be from the same batch as those used in the accessory type test. In the event that the initial fingerprinting test was not carried out at the time of the accessory type test, the samples shall be taken from material available as agreed between manufacturer and user.

4.1 Sampling

Samples shall be taken from original components as delivered in the kit, with or without sealant.

The general requirements in Annex B shall apply.

4.2 Preparation and conditioning

Original components shall be individually prepared and conditioned in accordance with the relevant test method conditions. For components with sealant, the sealant shall be removed, when required (as specified in the remarks column of Table 1), before running the test.

4.3 Testing

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

4.4 Test Report

The test report shall include the following data:

1. part number or identification;
2. lot number and/or manufacturing date;
3. tests method and results;
4. copy of technical data and MSDS;
5. major test parameters, including conditioning and calibration, if any.

5 Type tests

These tests are of such a nature that, once successfully completed, they need not be repeated unless changes are made in the material, component formulation or manufacturing process, which might change the performance characteristics.

5.1 Sampling

For each test, the number of samples of the heat shrinkable components indicated in the test method shall be used. Samples shall be taken from original components as delivered in the kit, with or without sealant. In addition, for components with coated sealant, a sufficient quantity of sealant material shall be supplied to the testing laboratory with correct identification, to carry out the required physical tests. The corresponding technical data sheet (TDS) and material safety data sheet (MSDS) shall be supplied.

The general requirements in Annex B shall apply.

5.2 Preparation and conditioning

Original components shall be individually prepared and conditioned according to the relevant test method conditions. For components with sealant, the sealant shall be removed when required in the remarks column of Table 2 part B, before running the test.

5.3 Testing

Prior to the tests, the MSDS shall be checked by an authorized person, in accordance with the relevant European or any overriding national legislation. The laboratory shall also check that the packaging or the kit is correctly labelled, and report this also.

5.3.1 Heat shrinkable component

Components shall be tested in accordance with the test methods specified in Table 2.

NOTE Mechanical tests on moulded part are carried out if possible on parts cut from the final product. If it is not possible plaques will be produced.

5.3.2 Sealant

Tests on the sealant (hot melt or mastic) shall preferably be run on a sample of the sealant supplied as separate item with proper identification. If not possible, sufficient quantity shall be collected from the heat shrinkable tubing or part to be tested.

5.4 Test Report

The test report shall include the following data:

1. MSDS analysis;
2. part number or identification;
3. lot number and/or manufacturing date;
4. conformity of marking and labeling to MSDS;
5. tests methods and results;
6. major test parameters, including conditioning and calibration, if any.