
Elektroenergetski kabli za nazivne napetosti od 3,6/6 (7,2) kV do vključno 20,8/36 (42) kV s posebnimi ognjevzdržnimi lastnostmi za uporabo v elektrarnah

Power cables having rated voltages from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV with special fire performance for use in power stations

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https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005](https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005)

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English version

**Power cables having rated voltages
from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV
with special fire performance for use in power stations**

Câbles d'énergie de tension assignée
de 3,6/6 (7,2) kV à 20,8/36 (42) kV inclus,
ayant un comportement au feu particulier
et destinés aux centrales électriques

Starkstromkabel mit Nennspannungen
von 3,6/6 (7,2) kV bis 20,8/36 (42) kV
mit verbessertem Verhalten im Brandfall
für Kraftwerke

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This amendment A2 modifies the Harmonization Document HD 622 S1:1996; it was approved by CENELEC on 2005-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this amendment on a national level.

Up-to-date lists and bibliographical references concerning such national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in one official version (English).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

FOREWORD

This amendment to the Harmonization Document HD 622 S1:1996 was prepared by WG9 of the Technical Committee CENELEC TC 20, Electric Cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A2 to HD 622 S1:1996 on 2005-05-01.

The following dates were fixed:

- latest date by which the existence of the amendment has to be announced at national level (doa) 2005-11-01
- latest date by which the amendment has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 2006-05-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2008-05-01

Users of HD 622 should note that, in the particular sections, cross-references have only been updated where the complete section has been re-issued. This Part 0 of HD 622 contains a list of relevant changes to cross-references, which should be consulted in conjunction with the particular section. National standards implementing one or more particular sections of HD 622 may update cross-references in advance of changes to the published version of the HD.

By decision of the Technical Board (D81/139 extended by D104/118 & D114/076) this HD exists only in English.

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[SIST HD 622 S1:1998/A2:2005](https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005)
<https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005>

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(HD 622 S1:1996 plus Amendment No. 1 and Amendment No. 2)

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Part 3 Single core and three core cables containing halogenated materials

3-A (Spare)

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3-C1 Three core PVC insulated and sheathed, non-radial field cables with aluminium conductors and metallic tape armour

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4-H²⁾ Single and three core cables with non-halogenated materials and with aluminium or steel wire armouring

4-I³⁾ Single core cables with halogen free materials and with aluminium alloy wire armouring

¹⁾ Amendment No. 1 introduces some changes to the text

²⁾ Amendment No. 1 completely revises the Particular Section

³⁾ Amendment No. 2 completely revises the Particular Section

⁴⁾ Amendment No. 2 withdraws the Particular Section

PART 1: GENERAL REQUIREMENTS

Replace the complete part by the following

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[SIST HD 622 S1:1998/A2:2005](https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005)
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<https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005>

HD 622 S1:1996/A2:2005

**POWER CABLES HAVING RATED VOLTAGE FROM
3,6/6 (7,2) kV UP TO AND INCLUDING 20,8/36 (42) kV
WITH SPECIAL FIRE PERFORMANCE FOR USE IN POWER STATIONS**

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PART 1: GENERAL REQUIREMENTS
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[SIST HD 622 S1:1998/A2:2005](https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005)

<https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005>

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References

Part 1 of HD 622 S1 incorporates by dated or undated reference, provisions from other publications. These references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to Part 1 of HD 622 S1 only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 50266 (series)	Common test methods for cables under fire conditions – Test for vertical flame spread of vertically-mounted bunched wires or cables.
EN 50267 (series)	Common test methods for cables under fire conditions - Tests on gases evolved during combustion of materials from cables.
EN 50268 (series)	Measurement of smoke density of electric cables burning under defined conditions.
EN 50334	Marking by inscription for the identification of cores of electric cables
EN 60228	Conductors of insulated cables
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
EN 60811 (series)	Insulating and sheathing materials of electric cables – Common test methods
HD 21	Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation
HD 22	Cables of rated voltages up to and including 450/750 V and having crosslinked insulation http://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005
HD 605	Electric cables – Additional test methods

1 General

1.1 Scope

HD 622 applies to rigid cables for fixed installations having rated voltages U_o/U (U_m) from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV used in systems of voltages not exceeding the maximum r.m.s. value of the system voltage U_m .

The insulation and sheaths may be either thermoplastic or thermosetting, halogenated or halogen free. The cables are mainly intended for use in power generating plants and sub-stations. All cables have specific fire performance requirements. Cables designed to be installed within the containment area of nuclear power plants (LOCA cables), or cables specifically designed to be radiation resistant are not included in this HD.

This Part 1 specifies the general requirements applicable to these cables; additional or deviating requirements are given in the particular sections of this HD.

Test methods are specified in EN 50266, EN 50267, EN 50268, EN 60228, EN 60332-1-2, EN 60811, HD 21, HD 22 and HD 605, which are referenced in the particular sections where relevant.

The particular types of cables are specified in Parts 3 and 4.

1.2 Object

The objects of this Harmonisation Document are:

- to standardise cables that are safe and reliable when properly used;
- to state the characteristics and manufacturing requirements directly or indirectly bearing on safety;
- to specify methods for checking conformity with those requirements.

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2 Definitions

2.1 Definitions relating to insulating and sheathing compounds

2.1.1 Insulating and sheathing compounds

The types of insulating and sheathing compounds covered in this HD are listed below, together with their abbreviated designations.

2.1.1.1 Thermoplastic polyvinyl chloride compound (PVC)

Combinations of materials suitably selected, proportioned and treated, of which the characteristic constituent is polyvinyl chloride or one of its copolymers. The same term also designates compounds containing both polyvinyl chloride and certain of its copolymers.

2.1.1.2 Cross-linked ethylene propylene rubber (EPR)

A compound based on ethylene propylene rubber or similar (EPM or EPDM) which when cross-linked complies with the requirements given in the particular sections.

2.1.1.3 Cross-linked polyethylene (XLPE)

A thermosetting material formed by the cross-linking of thermoplastic polyethylene compound either by chemical or irradiation methods so as to comply with the requirements given in the particular sections.

2.1.1.4 Ethylene copolymers

Thermoplastic or cross-linked materials in which the characteristic constituent is a copolymer of ethylene such as EVA, EEA, EMA, compounded so as to comply with the requirements given in the particular sections.

2.1.1.5 Chlorinated synthetic elastomeric compound

A vulcanised compound in which the characteristic constituent is polychloroprene rubber (PCP) or other chlorinated synthetic elastomer, such as CSP, CPE or NBR/PVC, compounded so as to comply with the requirements given in the particular sections.

NOTE The abbreviations PCP, CSP and CPE are those in common use. Equivalent codings according to ASTM are CR, CSM and CM.

2.1.2 Type of compound

The category in which a compound is placed according to its properties, as determined by specific tests. The type designation is not directly related to the composition of the compound.

2.2 Definitions relating to the tests

NOTE Tests classified as sample (S) or routine (R) may be required as part of any type approval scheme.

2.2.1 Type tests (symbol T)

Tests required to be made before supplying a type of cable covered by this HD on a general commercial basis in order to demonstrate satisfactory performance characteristics to meet the intended application. These tests are of such a nature that, after they have been made, they need not be repeated unless changes are made in the cable material, design or type of manufacturing process which might change the performance characteristics.

2.2.2 Sample tests (symbol S)

Tests made on selected lengths of completed cable, on samples of completed cable, or components taken from a completed cable adequate to verify that the finished product meets the design specifications.

2.2.3 Routine tests (symbol R)

Tests made on all production cable lengths to demonstrate their integrity.

2.2.4 Tests after installation

Tests intended to demonstrate the integrity of the cable and its accessories as installed.

2.3 Rated voltage

The rated voltage of a cable is the reference voltage for which the cable is designed, and which serves to define the electrical tests.

The rated voltage is expressed by the combination of the following values U_o/U (U_m) expressed in kV:

U_o is the r.m.s. value between any insulated conductor and earth (metal covering of the cable or the surrounding medium); e.g. $U_o = 3,6$ kV.

U is the r.m.s. value between any two phase-conductors of a multicore cable or of a system of single-core cables; e.g. $U = 6,0$ kV.

U_m is the maximum r.m.s. value of the highest system voltage for which the equipment may be used; e.g. $U_m = 7,2$ kV.

The standard rated voltages $U_0/U(U_m)$, in kV r.m.s. of the cables in this HD are as follows:

$U_0/U(U_m)$	=	3,6/6(7,2)	3,8/6,6(7,2)	6/6(7,2)
		6/10(12)	6,35/11(12)	8,7/15(17,5)
		12/20(24)	18/30(36)	

In an alternating current system, the rated voltage of a cable shall be at least equal to the nominal voltage of the system for which it is intended.

3 Marking

3.1 Indication of origin

Cables shall be provided with an identification of origin consisting of the continuous marking of the manufacturer's name or trademark, or (if legally protected) identification number, by one of the two following alternative methods:

- printed tape within the cable;
- printing, indenting or embossing on the outer surface of the cable.

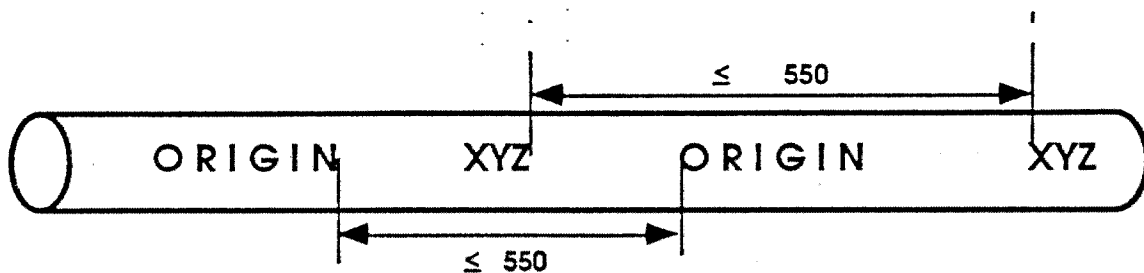
3.1.1 Continuity of marks

Unless otherwise specified in the particular sections, each specified mark shall be regarded as continuous if the distance between the end of the mark and the beginning of the next identical mark does not exceed:

- 550 mm if the marking is on the outer surface of the cable;
- 275 mm if the marking is on a tape.

NOTE A "specified mark" is any mandatory mark covered by this Part of the HD or by the particular requirements of Part 3 onwards of this HD.

The diagram below shows an example of the marking as used on the outer surface of the cable, where the word "ORIGIN" is for the mandatory information required for 3.1, and "XYZ" is one of the other mandatory marks.



3.2 Additional marking

Additional marking may be specified in the particular sections.

3.3 Durability

Printed markings shall be durable. Compliance with this requirement shall be checked by the test given in 2.5.4 of HD 605.

The printed legend shall be legible after the test.

3.4 Legibility

All markings shall be legible. Printed markings shall be in contrasting colours.

3.5 Common marking

Under consideration.

3.6 Use of the name CENELEC

The name CENELEC, in full or abbreviated, shall not be directly marked on or in the cables.

4 Core identification

The cores shall be identified by colours or numbers when specified in the particular section. Colouring shall be achieved by the use of coloured insulation or by a coloured surface.

When identification is by numbers, they shall be printed in a colour which contrasts with the core colours. In respect of size and characteristics of numerals marking shall comply with EN 50334 unless otherwise specified.

The colours shall be clearly identifiable and durable. Durability shall be checked by the test given in 2.5.4 of HD 605.

Compliance with these requirements shall be verified by visual examination.

5 General requirements for the construction of cables

5.1 Conductors

5.1.1 Material

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https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005](https://standards.iteh.ai/catalog/standards/sist/584ad071-7866-44e9-a8b0-5709836ca2f3/sist-hd-622-s1-1998-a2-2005)

Conductors shall be either plain or metal-coated annealed copper or plain aluminium in accordance with EN 60228, and with particular requirements in particular sections.

5.1.2 Construction

The minimum number of wires shall be in accordance with EN 60228, unless otherwise specified in the particular section.

The classes of the conductors relevant to the various types of cables are given in the particular section.

Conductors shall be either circular or sector in shape, and of solid metal or stranded.

5.1.3 Check of construction

Compliance with the requirements of 5.1.1 and 5.1.2 including the requirements of EN 60228 shall be checked by inspection and by measurement.

5.1.4 Electrical resistance

The resistance of each conductor at 20°C shall be in accordance with the requirements of EN 60228 for the specified class of conductor.

Compliance shall be checked by the test specified in 3.1.1 of HD 605.