SIST

SLOVENSKI STANDARD
SIST HD 22.10 S2:2007

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Nadomeġļ a:

SIST HD 22.10 S1:1998

SIST HD 22.10 S1:1998/A1:1999

Kabli z omreġeno izolacijo za naznaļ ene napetosti do vkljuļ no 450/750 V ï 10. del: Zvijavi kabli, izolirani z EPR in oplaġļ eni z poliuretanom

Cables of rated voltages up to and including 450/750 V and having cross-linked insulation -- Part 10: EPR insulated and polyurethane sheathed flexible cables

Starkstromleitungen mit vernetzter Isolierhülle für Nennspannungen bis 450/750 V - Teil 10: EPR-isolierte flexible Starkstromleitungen mit Polyurethanmantel

Conducteurs et câbles isolés avec des matériaux réticulés de tension assignée au plus égale a 450/750 V - Partie 10: Câbles souples à isolation EPR et gaine polyuréthane

Ta slovenski standard je istoveten z: **HD 22.10 S2:2007**

ICS:

29.060.20	Kabli	Cables

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HARMONIZATION DOCUMENT

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

HD 22.10 S2

February 2007

ICS 29.060.20

Supersedes HD 22.10 S1:1994 + A1:1999

English version

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This Harmonization Document was approved by CENELEC on 2006-12-01. 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 Central Secretariat or to any CENELEC member.

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

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

Ref. No. HD 22.10 S2:2007 E

Foreword

This Harmonization Document was prepared by 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 HD 22.10 S2 on 2006-12-01.

This Harmonization Document supersedes HD 22.10 S1:1994 + A1:1999.

The following dates were fixed:

– latest date by which the existence of the HD has to be announced at national level	(doa)	2007-06-01
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement	(dop)	2007-12-01
– latest date by which the national standards conflicting with the HD have to be withdrawn	(dow)	2008-12-01

HD 22, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation,* now has the following parts:

HD 22.1 S4	General requirements
HD 22.2 S3[1)]	Test methods
HD 22.3 S4	Heat resistant silicone rubber insulated cables
HD 22.4 S4	Cords and flexible cables
HD 22.5	(Spare)
HD 22.6 S2	Arc welding cables
HD 22.7 S2	Cables with increased heat resistance for internal wiring for a conductor temperature of 110 °C
HD 22.8 S2	Polychloroprene or equivalent synthetic elastomer sheathed cable for decorative chains
HD 22.9 S3	Single core halogen-free non-sheathed cables for fixed wiring having low emission of smoke
HD 22.10 S2	EPR insulated and polyurethane sheathed flexible cables
HD 22.11 S2	EVA cords and flexible cables
HD 22.12 S2	Heat resistant EPR cords and flexible cables
HD 22.13 S2	Halogen-free flexible cables having low emission of smoke
HD 22.14 S3	Cords for applications requiring high flexibility
HD 22.15 S2	Multicore cables insulated and sheathed with heat resistant silicone rubber
HD 22.16 S2	Water resistant polychloroprene or equivalent synthetic elastomer sheathed cables

1) HD 22.2 has been superseded by EN 50395 and EN 50396

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1 Scope

This Part 10 of the HD details the particular requirements for ethylene-propylene rubber insulated, and thermoplastic polyurethane sheathed cable for a maximum conductor temperature of 90 °C and lowest handling temperature of –40 °C.

Each cable shall comply with the appropriate requirements given in Part 1 of this HD and the particular requirements of this part.

NOTE The overall dimensions of the cables in this part of HD 22 have been calculated in accordance with EN 60719.

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 50363-1	Insulating, sheathing and covering materials for low voltage energy cables – Part 1: Cross-linked elastomeric insulating compounds
EN 50363-10-2	Insulating, sheathing and covering materials for low voltage energy cables – Part 10-2: Miscellaneous sheathing compounds – Thermoplastic polyurethane
EN 50395	Electrical test methods for low voltage energy cables
EN 50396	Non-electrical test methods for low voltage energy cables
EN 60228	Conductors of insulated cables (IEC 60228)
EN 60811 series	Insulating and sheathing materials of electric and optical cables – Common test methods (IEC 60811 series)

3 EPR insulated and polyurethane sheathed flexible cable (300/500 V)

3.1 Code designation

H05BQ-F.

3.2 Rated voltage

300/500 V.

3.3 Construction

3.3.1 Conductor

Number of conductors: 2, 3, 4 or 5.
The conductors shall be in accordance with the requirements given in EN 60228 for Class 5 conductors. The wires may be plain or tinned.

3.3.2 Separator

A separator of suitable material may be applied around each conductor.

3.3.3 Insulation

The insulation shall be rubber compound of type EI 6 to EN 50363-1 applied around each conductor.

The insulation shall be applied by extrusion.

The insulation thickness shall comply with the specified value given in Table 1, column 2.

3.3.4 Assembly of cores and filler, if any

The cores shall be twisted together.

A centre filler may be used.

3.3.5 Inner covering

The twisted cores may be covered by either:

- an extruded inner covering of an non-crosslinked rubber or plastic compound; or by
- a separating tape of suitable material, which may be combined with separate fillers.

Alternatively the sheath may fill the spaces between cores.

There shall be no harmful interactions between the inner covering and the insulation and/or the sheath at the operating temperature. Compliance with this requirement shall be checked by the test given in Subclause 8.1.4 of EN 60811-1-2.

The extruded inner covering, or alternatively the sheath, shall surround the twisted cores and penetrate the spaces between them, giving the assembly a practically circular shape. The extruded inner covering shall not adhere to the cores.

The approximate value of thickness of the extruded inner covering is 0,3 mm. No thickness measurement is required.

3.3.6 Sheath

The sheath shall be thermoplastic polyurethane of type TMPU to EN 50363-10-2 applied around the inner covering or, where there is no separate inner covering, around the core assembly.

The thickness of sheath shall comply with the specified value given in Table 1, column 3.

The sheath shall be extruded in a single layer and fit closely but not adhere to the inner covering, or, where there is no separate inner covering, shall not adhere to the cores.

3.3.7 Overall diameter

The mean overall diameter shall be within the limits given in Table 1, columns 4 and 5.

3.3.8 Outer marking

The cable shall have the marking H05BQ-F printed or embossed on, or indented into, the outer surface of the polyurethane sheath. The marking, which shall meet the requirements of Subclauses 3.2 and 3.3 of Part 1, shall be legible.

3.4 Tests

Compliance with the requirements of Subclause 3.3 shall be checked by inspection and by the tests given in Table 2.

The requirements to be met for the compatibility test shall be as given in Annex A.

3.5 **Guide to use** (informative)

See HD 516.

Table 1 - Dimensions of Type H05BQ-F

1	2	3	4	5
Number and nominal cross-sectional area of conductors	**Thickness of insulation Specified value**	**Thickness of sheath Specified value**	**Mean overall diameter**	
			Lower limit	**Upper limit**
mm²	mm	mm	mm	mm
2 x 0,75	0,6	0,8	5,7	7,4
2 x 1	0,6	0,9	6,1	8,0
3 x 0,75	0,6	0,9	6,2	8,1
3 x 1	0,6	0,9	6,5	8,5
4 x 0,75	0,6	0,9	6,8	8,8
4 x 1	0,6	0,9	7,1	9,3
5 x 0,75	0,6	1,0	7,6	9,9
5 x 1	0,6	1,0	8,0	10,3

Table 2 – Tests for type H05BQ-F

1	2	3	4	5
Ref No.	Tests	Category of test	Test method described in	
			HD/EN	Sub(clause)
1	**Electrical Tests**			
1.1	Resistance of conductors	T,S	50395	5
1.2	Voltage test on completed cable at 2 000 V	T,S	50395	6
1.3	Voltage test at 1 500 V on cores	T	50395	7
1.4	Absence of faults on insulation	R	50395	10
1.5	Surface resistance of sheath	T	50395	11
2	**Provisions covering constructional and dimensional characteristics**			
2.1	Checking of compliance with constructional provisions	T,S	22.1	Inspection and manual tests
2.2	Measurement of insulation thickness	T,S	50396	4.1
2.3	Measurement of sheath thickness	T,S	50396	4.2
2.4	Measurement of overall dimensions			
2.4.1	- mean value	T,S	50396	4.4
2.4.2	- ovality	T,S	50396	4.4
2.5	Solderability test (Plain conductors)	T	50396	8.2
3	**Insulation material tests**	T	50363-1 [a]	
4	**Sheath material tests**	T	50363-10-2 [a]	
5	**Compatibility test**	T	60811-1-2	8.1.4
6	**Impact test at –40 °C**	T	60811-1-4	8.5
7	**Mechanical strength of completed cable**			
7.1	Flexing test followed, after removal of the sheath, by a voltage test at 1 500 V on cores immersed in water	T	50396 50395	6.2 7

[a] This EN includes all the test methods and requirements for the material. Material to be tested is taken from the finished cable.