

SLOVENSKI STANDARD
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Cables of rated voltages up to and including 450/750 V and having cross-linked insulation -- Part 15: Multicore cables insulated and sheathed with heat resistant silicone rubber

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Starkstromleitungen mit vernetzter Isolierhülle für Nennspannungen bis 450/750 V - Teil 15: Wärmebeständige mehradrige Silikon-Schlauchleitungen

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Conducteurs et câbles isolés avec des matériaux réticulés de tension assignée au plus égale a 450/750 V - Partie 15: Câbles multiconducteurs a isolant et gaine en silicone résistant a la chaleur

Ta slovenski standard je istoveten z: HD 22.15 S2:2007**ICS:**

29.060.20 Kabli Cables

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English version

**Cables of rated voltages up to and including 450/750 V
and having cross-linked insulation -
Part 15: Multicore cables insulated and sheathed
with heat resistant silicone rubber**

Conducteurs et câbles isolés avec
des matériaux réticulés de tension
assignée au plus égale à 450/750 V -
Partie 15: Câbles multiconducteurs
à isolant et gaine en silicone résistant
à la chaleur

Starkstromleitungen mit vernetzter
Isolierhülle für Nennspannungen
bis 450/750 V -
Teil 15: Wärmebeständige mehradrige
Silikon-Schlauchleitungen

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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

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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 22.15 S2 on 2006-12-01.

This Harmonization Document supersedes HD 22.15 S1:1999.

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 15 of the HD details the specifications for multicore cables of rated voltage 300/500 V, insulated and sheathed with heat resistance silicone rubber, with or without strain-bearing element.

The maximum permissible conductor temperature is 180 °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 of 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 10002-1	Metallic materials – Tensile testing – Part 1: Method of test at ambient temperature
EN 50363-1	Insulating, sheathing and covering materials for low voltage energy cables – Part 1: Cross-linked elastomeric insulating compounds
EN 50363-2-1	Insulating, sheathing and covering materials for low voltage energy cables – Part 2-1: Cross-linked elastomeric sheathing compounds
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 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 (IEC 60332-1-2)
EN 60811 series	Insulating and sheathing materials of electric and optical fibre cables – Common test methods (IEC 60811 series)

3 Heat resistant silicone rubber sheathed multicore flexible cables without strain-bearing element

3.1 Code designation

H05SS-F for unbraided cables without strain-bearing element.

H05SST-F for braided cables without strain-bearing element.

3.2 Rated voltage

300/500 V.

3.3 Construction

3.3.1 Conductor

Number of conductors : 2, 3, 4 or 5

Nominal cross section : 0,75 mm² up to 2,5 mm² for 2 and 5 cores
0,75 mm² up to 6 mm² for 3 and 4 cores

The conductors shall comply with the requirements given in EN 60228 for Class 5 conductors. The wires may be plain or metal coated, for example with tin or silver.

3.3.2 Separator

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

3.3.3 Insulation

The insulation shall be a cross-linked compound of Type EI 2 to EN 50363-1 applied around each conductor.

The insulation shall be applied by extrusion. It may consist of one or two layers. All tests shall be applied to the complete insulation, which shall meet the requirements for Type EI 2.

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

3.3.4 Assembly of cores

The cores shall be twisted together. [SIST HD 22.15 S2:2007](https://standards.iteh.ai/catalog/standards/sist/45d5929c-fbd2-41ea-99fb-6f62b7e2cca8/sist-hd-22-15-s2-2007)
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3.3.5 Sheath

The core assembly shall be covered with a sheath.

The sheath shall be a cross-linked compound of Type EM 9 to EN 50363-2-1 applied around the cores.

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

The sheath shall be applied by extrusion in a single layer, such that it fills the spaces between the cores and fillers, if any, and gives the cable a reasonably circular cross-section.

NOTE A suitable filler may be used in conjunction with the sheath.

The sheath shall be capable of being removed without damage to the cores.

3.3.6 Braid (if any)

For cable type H05SST-F the sheath shall be provided with a braid of suitable material. The braid, shall have a uniform texture, without knots or gaps.

3.3.7 Overall diameter

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

NOTE The mean overall diameter for the braided cable (Type H05SST-F) may be increased in accordance with Note a of Table 1.

3.3.8 Outer markings

The cable shall have the marking H05SS-F (or H05SST-F as appropriate) printed or embossed on, or indented into, the outer surface of the sheath or on the insulation of one of the cores. 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 H05SS-F and H05SST-F

1	2	3	4	5
Nominal cross sectional area of conductors	Thickness of insulation Specified value	Thickness of sheath Specified value	Mean overall diameter for type H05SS-F ^a	
			Lower limit	Upper limit
mm ²	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
2 x 1,5	0,8	1,0	7,6	9,8
2 x 2,5	0,9	1,1	9,0	11,6
3 x 0,75	0,6	0,9	6,2	8,1
3 x 1	0,6	0,9	6,5	8,5
3 x 1,5	0,8	1,0	8,0	10,4
3 x 2,5	0,9	1,1	9,6	12,4
3 x 4	1,0	1,2	11,3	14,5
3 x 6	1,0	1,4	12,8	16,3
4 x 0,75	0,6	0,9	6,8	8,8
4 x 1	0,6	0,9	7,1	9,3
4 x 1,5	0,8	1,1	9,0	11,6
4 x 2,5	0,9	1,2	10,7	13,8
4 x 4	1,0	1,3	12,7	16,2
4 x 6	1,0	1,5	14,2	18,1
5 x 0,75	0,6	1,0	7,6	9,9
5 x 1	0,6	1,0	8,0	10,3
5 x 1,5	0,8	1,1	9,8	12,7
5 x 2,5	0,9	1,3	11,9	15,3

^a For type H05SST-F, the lower and upper limits for the overall diameter are increased by 1,0 mm.

Table 2 - Tests for Type H05SS-F and H05SST-F

1	2	3	4	5
Ref No.	Tests	Category of test	Test method described in EN or HD	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 on cores according to the specified insulation thickness			
1.3.1	- at 1 500 V up to and including 0,6 mm	T	50395	7
1.3.2	- at 2 000 V above 0,6 mm	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 thickness of insulation	T, S	50396	4.1
2.3	Measurement of thickness of sheath	T, S	50396	4.2
2.4	Measurement of overall diameter			
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 °	
4	Sheath material tests	T	50363-2-1 °	
5	Compatibility test	T	60811-1-2	8.1.4
6	Impact test at -25 °C	T	60811-1-4	8.5
7	Mechanical strength of completed cable ^a			
7.1	Flexing test followed, after immersion in water, by a voltage test	T	50396	6.2
	- at 2 000 V for two core cables	T	50395	7
	- at 1 500 V for cables having more than two cores	T	50395	7
8	Tests under fire conditions ^b	T	60332-1-2	
^a Not applicable to cables having conductors greater than 4 mm ² . ^b Not applicable to cables having a polyester braid overall (see HD 516). ^c This EN includes all the test methods and requirements for the material. Material to be tested is taken from the finished cable.				