

**SLOVENSKI STANDARD**  
**SIST HD 22.11 S2:2007****01-junij-2007****BUXca Yý U****SIST HD 22.11 S1:1998****SIST HD 22.11 S1:1998/A1:1999**

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Cables of rated voltages up to and including 450/750 V and having cross-linked insulation -- Part 11: EVA cords and flexible cables

**iTeh STANDARD PREVIEW**

Starkstromleitungen mit vernetzter Isolierhülle für Nennspannungen bis 450/750 V – Teil 11: EVA-Schlauchleitungen

[SIST HD 22.11 S2:2007](#)

Conducteurs et câbles isolés avec des matériaux réticulés de tension assignée au plus égale a 450/750 V – Partie 11: Câbles souples a isolation EVA

**Ta slovenski standard je istoveten z: HD 22.11 S2:2007**

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**ICS:**

29.060.20      Kabli      Cables

**SIST HD 22.11 S2:2007**      en;fr;de

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SIST HD 22.11 S2:2007

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English version

**Cables of rated voltages up to and including 450/750 V  
and having cross-linked insulation –  
Part 11: EVA cords and flexible cables**

Conducteurs et câbles isolés  
avec des matériaux réticulés  
de tension assignée  
au plus égale à 450/750 V –  
Partie 11: Câbles souples à isolation EVA

Starkstromleitungen mit vernetzter  
Isolierhülle für Nennspannungen  
bis 450/750 V –  
Teil 11: EVA-Schlauchleitungen

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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. <http://standards.iteh.ai/catalog/standards/sist/2281da8f-e238-4066-af6d-fa94733d9dcf/sist-hd-22-11-s2-2007>

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**

## 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 22.11 S2 on 2006-12-01.

This Harmonization Document supersedes HD 22.11 S1:1995 + 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 <sup>1)</sup>	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

<sup>1)</sup> HD 22.2 is superseded by EN 50395 and EN 50396.

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## 1 Scope

This Part 11 of the HD details the particular specifications for cross-linked EVA or equivalent synthetic elastomer insulated and vulcanised EVA or equivalent synthetic elastomer sheathed cords and flexible cables of rated voltages up to and including 300/500 V for use with a conductor temperature not exceeding 110 °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 50363-2-1	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 60811 series	Insulating and sheathing materials of electric and optical cables – Common test methods (IEC 60811 series):2007 <a href="https://standards.iteh.ai/catalog/standards/sist/2281da8f-e238-4066-af6d-fa94733d9dcf/sist-hd-22-11-s2-2007">https://standards.iteh.ai/catalog/standards/sist/2281da8f-e238-4066-af6d-fa94733d9dcf/sist-hd-22-11-s2-2007</a>

## 3 Ordinary heat-resistant EVA or equivalent synthetic elastomer insulated and EVA or equivalent synthetic elastomer sheathed cord and cable for a maximum conductor temperature of 110 °C

### 3.1 Code designation

H05GG-F for circular cables.  
H05GGH2-F for flat cables.

### 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 shall be applied around each conductor if the conductors are plain. If the conductors are tinned the use of a separator is optional.

### 3.3.3 Insulation

The insulation shall be rubber compound of Type EI 3 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

Circular cables: the cores shall be twisted together. A centre filler may be used.

Flat cables: the cores shall be laid in parallel.

### 3.3.5 Sheath

The sheath shall be rubber compound of Type EM 4 to EN 50363-2-1 applied around the cores.

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

The sheath shall be extruded in a single layer and applied in such a way that it fills the spaces between the cores.

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

### 3.3.6 Overall dimensions

The mean overall diameter of circular cables and mean overall dimensions of flat cables shall be within the limits given in Table 1, columns 4 and 5.

### 3.3.7 Outer markings

The cable shall have the marking H05GG-F (or H05GGH2-F for flat types) printed or embossed on, or indented into, the outer surface of the EVA 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 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 H05GG-F and H05GGH2-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
mm <sup>2</sup>	mm	mm	mm	mm
2 x 0,75	0,6	0,8	5,7 or 3,7 x 6,0	7,4 or 4,7 x 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



**Table 2 - Tests for types H05GG-F and H05GGH2-F**

1	2	3	4	5
Ref No.	Tests	Category of test	Test method described in HD/EN	Clause
<b>1</b>	<b>Electrical tests</b>			
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 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 exceeding 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
<b>2</b>	<b>Provisions covering constructional and dimensional characteristics</b>			
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,S	50396	8.2
<b>3</b>	<b>Insulation material tests</b>	T	50363-1 <sup>b</sup>	
<b>4</b>	<b>Sheath material tests</b>	T	50363-2-1 <sup>b</sup>	
<b>5</b>	<b>Compatibility test</b>	T	60811-1-2	8.1.4
<b>6</b>	<b>Impact test at -5 °C</b>	T	60811-1-4	8.5
<b>7</b>	<b>Mechanical strength of completed cable<sup>a</sup></b>			
7.1	Flexing test followed, after immersion in water, by a voltage test:	T	50396 50395	6.2 7
	- at 1 500 V on cores with specified insulation thickness up to and including 0,6 mm			
	- at 2 000 V on cores with insulation thickness exceeding 0,6 mm			

<sup>a</sup> Not applicable to cables having conductors greater than 4 mm<sup>2</sup>.

<sup>b</sup> This EN includes all the test methods and requirements for the material. Material to be tested is taken from the finished cable.