

Rubber insulated cables of rated voltages up to and including 450/750 V -  
Part 15: Multicore cables insulated and sheathed with heat resistant silicone  
rubber

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SIST HD 22.15 S1:2000

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English version

**Rubber insulated cables of rated voltages up to and  
including 450/750 V  
Part 15: Multicore cables insulated and sheathed with  
heat resistant silicone rubber**

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

Gummi-isolierte Leitungen mit  
Nennspannungen bis 450/750 V  
Teil 15: Wärmebeständige mehradrige  
SiR-Schlauchleitungen

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This Harmonization Document was approved by CENELEC on 1999-04-01. 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.

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

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

HD 22 was originally adopted by CENELEC on 9th July 1975.

Edition 2 of HD 22 was implemented on 1st January 1984, and at that time contained four parts.

Since 1984, new parts have been published and the original parts revised as Edition 3.

Part 15 introduces multicore cables with heat resistant silicone rubber insulation and sheathing. It was agreed by TC 20 at its Dublin meeting (April 1997) to go forward to UAP.

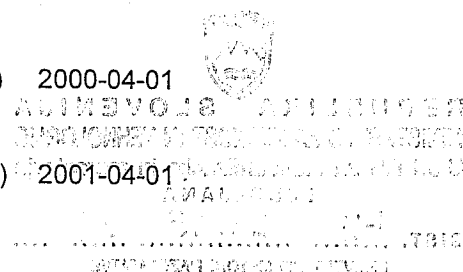
HD 22 now has the following parts:

- HD 22.1 S3 - General requirements
- HD 22.2 S3 - Test methods
- HD 22.3 S3 - Heat resistant silicone rubber insulated cables
- HD 22.4 S3 - 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 use as decorative chains
- HD 22.9 S2 - Single core non-sheathed cables for fixed wiring having low emission of smoke and corrosive gases
- HD 22.10 S1 - EPR insulated and polyurethane sheathed flexible cables
- HD 22.11 S1 - EVA cords and flexible cables
- HD 22.12 S1 - Heat resistant EPR cords and flexible cables
- HD 22.13 S1 - Single and multicore flexible cables, insulated and sheathed with crosslinked compound and having low emission of smoke and corrosive gases
- HD 22.14 S1 - Cords for applications requiring high flexibility
- HD 22.15 S1 - Multicore cables insulated and sheathed with heat resistant silicone rubber

This draft was submitted to the CENELEC Unique Acceptance Procedure in June 1998 and was approved by CENELEC as HD 22.15 S1 on 1999-04-01.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 1999-10-01
- latest date by which the HD has to be implemented at national level by publication of a harmonised national standard or by endorsement (dop) 2000-04-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2001-04-01



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## 1 Scope

This part (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.

All cables shall comply with the appropriate requirements in part 1 of this HD, and the particular requirements of this part 15.

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

## 2 Normative references

HD 22.15 incorporates by dated or undated reference, provisions from other publications. These normative 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 HD 22.15 only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- |              |  |
|--------------|--|
| HD 22        | Rubber insulated cables of rated voltages up to and including 450/750 V  |
| HD 383       | Conductors of insulated cables (endorsing IEC 228 and 228A)  |
| EN 10002-1   | Tensile testing of metallic materials - Part 1: Method of test at ambient temperature  |
| EN 50265-2-1 | Common test methods for cables under fire conditions - Test for resistance to vertical flame propagation for a single insulated conductor or cable - Part 2-1: Procedures - 1 kW pre-mixed flame |
| EN 60719     | Calculation of the lower and the upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750 V                     |
| EN 60811     | Common test methods for insulating and sheathing materials of electric cables  |

## 3 Heat resistance 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 mm<sup>2</sup> up to 2,5 mm<sup>2</sup> for 2 and 5 cores  
0,75 mm<sup>2</sup> up to 6 mm<sup>2</sup> for 3 and 4 cores

The conductors shall comply with the requirements given in HD 383 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, Type EI 2 applied around the 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. (standards.iteh.ai)

#### 3.3.4 Assembly of cores

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The cores shall be twisted together.

#### 3.3.5 Sheath

The core assembly shall be covered with a sheath.

The sheath shall be a cross-linked compound, applied by extrusion, type EM 9.

NOTE 1: Requirements for EM 9 are given in Annex X of HD 22.3 S3:1994/A1:1999. They will be transferred to HD 22.1 S3 at a later date.

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 2: 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 (1) of Table 1.

### 3.3.8 Markings

The marking shall be continuous, in accordance with Part 1, subclause 3.2.

## 3.4 Tests

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

## 3.5 Guide to use (informative)

See HD 516.

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**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(1)	
			Lower limit	Upper limit
(mm <sup>2</sup> )	(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

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