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**Kabli s polivinilkloridno izolacijo za naznačene napetosti do vključno 450/750 V - 7. del: Enožilni neoplaščeni kabli za notranje ožičenje za delovno temperaturo vodnika 90 °C**

Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 7: Single core non-sheathed cables for internal wiring for a conductor temperature of 90° C

Polyvinylchlorid-isolierte Leitungen mit Nennspannungen bis 450/750 V - Teil 7: Einadrige Leitungen ohne Mantel für die innere Verdrahtung mit einer höchstzulässigen Betriebstemperatur am Leiter von 90° C

[SIST HD 21.7 S2:1998](https://standards.iteh.ai/catalog/standards/sist/a3546f42-be02-487b-b792-2003-01-sist-hd-21.7-s2-1998)

Conducteurs et câbles isolés au polychlorure de vinyle, de tension assignée au plus égale à 450/750 V - Partie 7: Conducteurs pour une température de l'âme de 90° C, pour filerie interne

**Ta slovenski standard je istoveten z: HD 21.7 S2:1996**

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**ICS:**

29.060.20      Kabli      Cables

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HARMONIZATION DOCUMENT  
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**HD 21.7 S2**

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Supersedes HD 21.7 S1:1990 and its amendments

Descriptors: Insulated cable, polyvinyle chloride

English version

**Polyvinyl chloride insulated cables of rated voltages  
up to and including 450/750 V  
Part 7: Single core non-sheathed cables for internal wiring for a  
conductor temperature of 90° C**

Conducteurs et câbles isolés au  
polychlorure de vinyle, de tension  
assignée au plus égale à 450/750 V  
Partie 7: Conducteurs pour une  
température de l'âme de 90° C,  
pour filerie interne

Polyvinylchlorid-isolierte Leitungen mit  
Nennspannungen bis 450/750 V  
Teil 7: Einadrige Leitungen ohne Mantel  
für die innere Verdrahtung mit einer  
höchstzulässigen Betriebstemperatur am  
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This Harmonization Document was approved by CENELEC on 1995-11-28. 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, 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 21 was originally adopted by CENELEC on 9th July 1975.

Edition 2 of HD 21 was implemented on 1st January 1984, and at that time contained five parts.

Since 1984, new parts have been published, original parts amended and in addition HD 505 has superseded HD 385 as the cross-reference for test methods.

This edition 2 of HD 21.7 has been introduced to cover the complete revision of the overall dimensions, in line with EN 60719, and was approved by TC 20 at its Rotterdam meeting in March 1995 to go forward to the formal vote.

HD 21 now has the following parts:

- HD 21.1 S2 - General requirements (with A1 to A4 inclusive)
- HD 21.2 S2 - Test methods (with A1 inclusive)
- HD 21.3 S3 - Non-sheathed cables for fixed wiring
- HD 21.4 S2 - Sheathed cables for fixed wiring (Reprint)
- HD 21.5 S3 - Flexible cables (cords)
- HD 21.6 - (Spare)
- HD 21.7 S2 - Single core non-sheathed cables for internal wiring for a conductor temperature of 90 °C
- HD 21.8 S1 - Single core non-sheathed cables for decorative chains (with A1 inclusive)
- HD 21.9 S2 - Single core non-sheathed cables for installation at low temperatures
- HD 21.10 S1 - Extensible leads
- HD 21.11 S1 - Cables for luminaires
- HD 21.12 S1 - Heat-resistant flexible cables (cords)
- HD 21.13 S1 - Oil resistant PVC sheathed cables with two or more conductors

SIST HD 21.7 S2:1998

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In order that this revision of Part 7 of HD 21 does not introduce unnecessary changes to long-established clause numbers, the Normative references (which would otherwise be inserted as clause 2) are given in Annex A.

This Harmonization Document was prepared by the Technical Committee CENELECTC 20, Electric cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as HD 21.7 S2 on 1995-11-28.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 1996-03-01
- latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 1996-09-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 1996-09-01

For products which have complied with HD 21.7 S1:1990 and its amendments A1:1992 and A2:1993 before 1996-09-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-09-01.

**CONTENTS**

	<b>Page</b>
1. Scope	4
2. Single core non-sheathed cables for internal wiring for a Conductor temperature of 90°C (300/500V)	
2.1 Code designation	4
2.2 Rated voltage	4
2.3 Construction	4
2.4 Tests	5
2.5 Indication of origin and temperature marking	5
2.6 Guide to use	5
3. Single core non-sheathed cables for internal wiring for a Conductor temperature of 90°C (450/750V)	
3.1 Code designation	7
3.2 Rated voltage	7
3.3 Construction	7
3.4 Tests	7
3.5 Indication of origin and temperature marking	7
3.6 Guide to use	7
Annex A : Normative references (Normative)	10
Annex B : Bibliography (Informative)	11

**STANDARD PREVIEW**  
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[SIST HD 21.7 S2:1998](https://standards.iteh.ai/catalog/standards/sist/a3546f42-be02-487b-b792-5909f1c140e5/sist-hd-21-7-s2-1998)

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1. Scope

This Part 7 of the HD details the particular requirements for polyvinyl chloride insulated cables of rated voltages  $U_0/U$  up to and including 450/750V for internal wiring of electrical apparatus where wiring is operated in a high temperature zone. The high temperature may be caused by high ambient temperature and/or by heat generated by the equipment.

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

NOTE: The overall dimensions of the cables of this Part of HD 21 have been calculated in accordance with EN 60719.

2. Single core non-sheathed cables for internal wiring for a conductor temperature of 90°C (300/500V)2.1 Code designation

H05V2-U with solid conductor  
H05V2-R with stranded rigid conductor  
H05V2-K with flexible conductor

SIST HD 21.7 S2:1998

2.2 Rated voltage

300/500V

2.3 Construction2.3.1 Conductor

Number of Conductors : 1

The conductor shall comply with the requirements given in HD 383:

Class 1 for solid conductors

Class 2 for stranded rigid conductors (\*)

Class 5 for flexible conductors

(\*) If the cable is to be used for insulation displacement connectors (IDC) the conductor shall be of seven wires, concentric and circular.

2.3.2 Insulation

The insulation shall be polyvinyl chloride compound of the type TI 3, applied around each conductor.

The insulation thickness shall comply with the specified value given in Part 7, Table I, column 3.

The insulation resistance at 90°C shall be not less than the values given in Part 7, Table I, column 6.

### 2.3.3 Overall diameter

The mean overall diameter shall be within the limits given in Part 7, Table I, columns 4 and 5.

### 2.4 Tests

Compliance with the requirements of Part 7, clause 2.3 shall be checked by inspection and by the tests given in Part 7, Table II.

### 2.5 Indication of origin and temperature marking

In addition to the general requirement of Part 1, Clause 3 a continuous marking indicating temperature shall be applied using symbol "V2" (indicating the maximum admissible conductor temperature) by printing, indenting or embossing on the insulation.

### 2.6 Guide to use (Informative)

See HD 516.

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Table I  
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General Data for Types H05V2-U, H05V2-R and H05V2-K

SIST HD 21.7 S2:1998

1	2	3	4		5	6
Type of cable	Nominal cross-sectional areas of conductor (mm <sup>2</sup> )	Insulation thickness specified value (mm)	Mean overall diameter		Minimum insulation resistance at 90°C (Mohm.km)	
			Lower limit (mm)	Upper limit (mm)		
H05V2-U	0.5	0.6	1.9	2.3	0.015	
	0.75	0.6	2.1	2.5	0.012	
	1	0.6	2.2	2.7	0.011	
H05V2-R	0.5	0.6	2.0	2.4	0.014	
	0.75	0.6	2.2	2.6	0.012	
	1	0.6	2.3	2.8	0.011	
H05V2-K	0.5	0.6	2.1	2.5	0.013	
	0.75	0.6	2.2	2.7	0.011	
	1	0.6	2.4	2.8	0.010	

Table II

Tests for type H05V2-U, H05V2-R and type H05V2-K

1	2	3	4	5
Ref. No.	Tests	Category of test	Test method described in	
			HD/EN	Clause
1.	<u>Electrical tests</u>			
1.1	Resistance of conductor	T, S	21.2	2.1
1.2	Voltage test on completed cable at 2000V	T, S	21.2	2.2
1.3	Insulation resistance at 90°C	T, S	21.2	2.4
1.4	Long term resistance of insulation to d.c.	T	21.2	2.5
1.5	Check of absence of faults on insulation	R	21.2	2.6
2.	<u>Provisions covering constructional &amp; dimensional characteristics</u>			
2.1	Checking of compliance with constructional provisions	T, S	21.1	Inspection and manual tests
2.2	Measurement of thickness of insulation	T, S	21.2	1.9
2.3	Measurement of overall diameter	T, S	21.2	1.11
3.	<u>Mechanical properties of insulation</u>			
3.1	Tensile test before ageing	T	60811-1-1	9.1
3.2	Tensile test after ageing	T	60811-1-2	8.1.3.1
3.3	Loss of mass test	T	60811-3-2	8.1
4.	<u>Pressure test at high temperature</u>	T	60811-3-1	8.1
5.	<u>Tests at low temperature</u>			
5.1	Bending test on insulation	T	60811-1-4	8.1
6.	<u>Heat shock test</u>	T	60811-3-1	9.1
7.	<u>Thermal stability at 200°C</u>	T	60811-3-2	9
8.	<u>Test under fire conditions</u>	T	405.1	-



3. Single core non-sheathed cables for internal wiring for a conductor temperature of 90°C (450/750V)

3.1 Code designation

H07V2-U with solid conductor  
H07V2-R with stranded conductor  
H07V2-K with flexible conductor

3.2 Rated voltage

450/750V

3.3 Construction

3.3.1 Conductor

Number of conductors: 1

The conductor shall comply with the requirements given in HD 383:

Class 1 for solid conductors

Class 2 for stranded conductors

Class 5 for flexible conductors

3.3.2 Insulation

The insulation shall be polyvinyl chloride compound of the type Tl 3, applied around each conductor.

The insulation thickness shall comply with the specified value given in Part 7, Table III, column 3.

The insulation resistance at 90°C shall not be less than the values given in Part 7, Table III, column 6.

3.3.3 Overall diameter

The mean overall diameter shall be within the limits given in Part 7, Table III, columns 4 and 5.

3.4 Tests

Compliance with the requirements of Part 7, clause 3.3 shall be checked by inspection and by the tests given in Part 7, Table IV.

3.5 Indication of origin and temperature marking

In addition to the general requirement of Part 1, clause 3 a continuous marking indicating temperature shall be applied using symbol 'V2' (indicating the maximum admissible conductor temperature) by printing, indenting or embossing on the insulation.

3.6 Guide to use (Informative)

See HD 516