SLOVENSKI STANDARD
SIST HD 22.7 S2:1998

01-februar-1998

Kabli z gumijasto izolacijo za naznačene napetosti do vključno 450/750 V - 7. del: Kabli s povečano toplotno odpornostjo za notranje ožičenje z delovno temperaturo vodnika 110 °C

Cables of rated voltages up to and including 450/750 V and having cross-linked insulation - Part 7: Cables with increased heat resistance for internal wiring for a conductor temperature of 110 °C

Starkstromleitungen mit vernetzter Isolierhülle für Nennspannungen bis 450/750 V - Teil 7: Aderleitungen mit erhöhter Wärmebeständigkeit für die innere Verdrahtung mit einer zulässigen Temperatur am Leiter von 110 °C

Conducteurs de câbles isolés avec des matériaux réticulés de tension assignée au plus égale à 450/750 V - Partie 7: Conducteurs présentant une résistance accrue à la chaleur, pour une température de l'âme de 110 °C, pour filerie interne

Ta slovenski standard je istoveten z: **HD 22.7 S2:1995**

ICS:

29.060.20 Kabli Cables

SIST HD 22.7 S2:1998 **en**

HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 22.7 S2

September 1995

ICS 29.060.20

Supersedes HD 22.7 S1:1992

Descriptors: Insulated cable, rubber, flexible cable, specification, heat resistance

English version

Rubber insulated cables of rated voltages up to and including 450/750 V
Part 7: Cables with increased heat resistance for internal wiring for a conductor temperature of 110 °C

Conducteurs de câbles isolés au caoutchouc de tension assignée au plus égale à 450/750 V
Partie 7: Conducteurs présentant une résistance accrue à la chaleur, pour une température de l'âme de 110 °C, pour filerie interne

Isolierte Starkstromleitungen mit einer Isolierung aus Gummi mit Nennspannungen bis 450/750 V
Teil 7: Aderleitungen mit erhöhter Wärmebeständigkeit für die innere Verdrahtung mit einer zulässigen Temperatur am Leiter von 110 °C

This Harmonization Document was approved by CENELEC on 1995-05-15. 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

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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, original parts amended, and in addition HD 505 has superseded HD 385 as the cross-reference for test methods.

This edition 2 of HD 22.7 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 Helsinki meeting in May 1994.

HD 22 now has the following parts:

HD 22.1 S2	-	General requirements (with A1 to A10 inclusive)
HD 22.2 S2	-	Test methods (with A1 to A4 inclusive)
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 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 22.14 S1	-	Cords for applications requiring high flexibility

In order that this revision of Part 7 of HD 22 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 CENELEC TC 20, Electric cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as HD 22.7 S2 on 1995-05-15.

The following dates were fixed:

– latest date by which the existence of the HD has to be announced at national level	(doa)	1996-01-01
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement	(dop)	1996-07-01
– latest date by which the national standards conflicting with the HD have to be withdrawn	(dow)	1996-07-01

For products which have complied with HD 22.7 S1:1992 before 1996-07-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-07-01.

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1. Scope

This Part 7 of the HD details the particular specifications for rubber insulated cables of rated voltages Uo/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.

The cables 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 22 have been calculated in accordance with EN 60719

2. Cable with increased heat resistance for internal wiring for a conductor temperature of 110°C (450/750V)

2.1 Code designation

H07G-U with solid conductor
H07G-R with stranded conductor
H07G-K with flexible conductor

2.2 Rated voltage

450/750V

2.3 Construction

2.3.1 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

The wires may be plain or tinned.

2.3.2 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.

2.3.3 Insulation

The insulation shall be rubber compound of the type EI 3, applied around the conductor.

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

The insulation resistance shall be not less than the value given in Table I, column 6 of this Part.

2.3.4 Overall diameter

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

2.4 Tests

Compliance with the requirements of clause 2.3 above shall be checked by inspection and by the tests given in 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 the symbol 'G' (to indicate the maximum admissible conductor temperature) by printing, indenting or embossing on the insulation.

2.6 Guide to use (informative)

Table I

General Data for Types H07G-U, H07G-R and H07G-K

1	2	3	4	5	6
Type of cable	Nominal cross-sectional areas of conductor	Insulation thickness. Specified value	Mean overall diameter		Minimum insulation resistance at 110°C*
			lower limit	upper limit	
	mm²	mm	mm	mm	Mohm.km
H07G-U	1.5	0.8	2.8	3.5	0.012
	2.5	0.9	3.4	4.3	0.011
	4	1.0	4.0	5.0	0.010
	6	1.0	4.5	5.6	0.009
	10	1.2	5.7	7.1	0.008
H07G-R	1.5	0.8	2.9	3.7	0.012
	2.5	0.9	3.5	4.4	0.011
	4	1.0	4.2	5.2	0.010
	6	1.0	4.7	5.9	0.008
	10	1.2	6.0	7.4	0.008
	16	1.2	6.8	8.5	0.006
	25	1.4	8.4	10.6	0.006
	35	1.4	9.4	11.8	0.005
	50	1.6	10.9	13.7	0.005
	70	1.6	12.5	15.6	0.004
	95	1.8	14.5	18.1	0.004
	120	1.8	15.9	19.9	0.004
	150	2.0	17.7	22.1	0.004
	185	2.2	19.7	24.6	0.003
	240	2.4	22.4	28.0	0.003
H07G-K	1.5	0.8	3.0	3.7	0.012
	2.5	0.9	3.6	4.5	0.011
	4	1.0	4.3	5.4	0.010
	6	1.0	4.8	6.0	0.008
	10	1.2	6.0	7.6	0.008
	16	1.2	7.1	8.9	0.006
	25	1.4	8.8	11.0	0.005
	35	1.4	10.1	12.6	0.005
	50	1.6	11.9	14.9	0.004
	70	1.6	13.6	17.0	0.004
	95	1.8	15.5	19.3	0.004
	120	1.8	17.1	21.4	0.003
	150	2.0	19.0	23.8	0.003
	185	2.2	21.0	26.3	0.003
	240	2.4	23.9	29.9	0.003

* Test to be made in air; values based on a specific insulation resistance of 10^{10} ohm.cm

Table II

Tests for Type H07G-U, Type H07G-R and Type H07G-K

1	2	3	4	5
Ref. No.	Test	Category of test	Test method described in	
			HD	Clause
1.	Electrical tests			
1.1	Resistance of conductor	T, S	22.2	2.1
1.2	Voltage test on completed cable at 2500V	T, S	22.2	2.2
1.3	Insulation resistance at (110 ±2)°C	T	22.2	2.4
1.4	Check of absence of faults on insulation	R	22.2	2.6
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	22.2	1.9
2.3	Measurement of overall dimensions	T, S	22.2	1.11
3.	Mechanical properties of insulation			
3.1	Tensile test before ageing	T	505.1.1	9.1
3.2	Tensile test after ageing in the air oven	T	505.1.2	8.1.3.1
3.3	Tensile test after ageing the air bomb	T	505.1.2	8.2
4.	Hot Set Test	T	505.2.1	9
5.	Pressure test at high temperature	T	505.3.1	8.1