SLOVENSKI STANDARD
SIST HD 21.3 S3:1998

01-februar-1998

Kabli s polivinilkloridno izolacijo za naznačene napetosti do vključno 450/750 V - 3. del: Neoplaščeni kabli za stalno pokabljenje

Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 3: Non-sheathed cables for fixed wiring

Polyvinylchlorid-isolierte Leitungen mit Nennspannungen bis 450/750 V -- Teil 3: Aderleitungen für feste Verlegung

Conducteurs et câbles isolés au polychlorure de vinyle, de tension assignée au plus égale à 450/750 V -- Partie 3: Conducteurs pour installations fixes

Ta slovenski standard je istoveten z: **HD 21.3 S3:1995**

ICS:

29.060.20 Kabli Cables

SIST HD 21.3 S3:1998 **en**

HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 21.3 S3

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Supersedes HD 21.3 S2:1990

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Descriptors: Conductor, cable, flexible cable, rigid cable, single core cable, multicore cable, conductor material, flat cable, tinsel cord, compound, polyvinyl chloride, insulation compound, type test, sample test, routine test, nominal voltage, mark, common marking, identification, colour scheme, construction, insulation, filler, sheath, covering, internal covering, extruded covering, thickness, mean value, specified value, electrical resistance, test, tensile strength, elongation at break, ageing, loss of mass, non contamination, heat shock, pressure, high temperature, low temperature, elongation at low temperature, complete cable, overall dimensions, bending, flexing, voltage test, insulation resistance, absence of short circuits, spark (test), snatch (test), separation of cores, test (under) fire (conditions), guide to use, test method, frequency of test, fixed installation, solid conductor, rigid conductor, stranded conductor, general purposes, internal wiring

English version

Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
Part 3: Non-sheathed cables for fixed wiring
(IEC 227-3:1993, modified)

Conducteurs et câbles isolés au polychlorure de vinyle, de tension nominale au plus égale à 450/750 V
Partie 3: Conducteurs pour installations fixes
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Polyvinylchlorid-isolierte Leitungen mit Nennspannungen bis 450/750 V
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(IEC 227-3:1993, modifiziert)

This Harmonization Document was approved by CENELEC on 1994-12-06. 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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Ref. No. HD 21.3 S3:1995 E

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 3 of HD 21.3 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 London meeting in October 1993 to go forward to UAP.

HD 21 now has the following parts:

HD 21.1 S2	-	General requirements
HD 21.2 S2	-	Test methods
HD 21.3 S3	-	Non sheathed cables for fixed wiring
HD 21.4 S3	-	Sheathed cables for fixed wiring
HD 21.5 S3	-	Flexible cables (Cords)
HD 21.6	-	(Spare)
HD 21.7 S2	-	Single core non-sheathed cables for internal wiring (90 °C conductor temperature)
HD 21.8 S1	-	Single core non-sheathed cables for decorative chains
HD 21.9 S2	-	Single core non-sheathed cables for installations at low temperatures
HD 21.10 S1	-	Extensible leads

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 21.3 S3 on 1994-12-06.

The following dates were fixed:

– latest date by which the existance of the HD has to be announced at national level	(doa)	1995-06-01
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement	(dop)	1995-12-01
– latest date by which the national standards conflicting with the HD have to be withdrawn	(dow)	1995-12-01

For products which have complied with HD 21.3 S2:1990 before 1995-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1996-12-01.

NORMATIVE REFERENCES

References are made, in this Part 3 of HD 21, to other parts of this HD and to other ENs or HDs.

HD 383	Conductors of insulated cables (Endorsing IEC 228 and 228A)
HD 405.1	Tests on electric cables under fire conditions. Part 1: Test on a single vertical cable (Endorsing IEC 332-1)
HD 505	Common test methods for insulating and sheathing materials of Electric Cables (Endorsing IEC 811)
EN60719	Calculation of the lower and upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750V

INFORMATIVE REFERENCE

Reference is made, in this Part 3 of HD 21, to the following other HD:

HD 516	Guide to the use of low voltage harmonised cables.

In all cases a reference to another EN or HD implies the latest edition of that document.

CONTENTS

POLYVINYL CHLORIDE INSULATED CABLES OF RATED VOLTAGES UP TO AND INCLUDING 450/750V

Part 3 : Single core non-sheathed cables for fixed wiring

1. Scope

This particular part (Part 3) of the HD details the particular specifications for polyvinyl chloride insulated single-core non-sheathed cables for fixed wiring of rated voltages up to and including 450/750V.

All cables shall comply with the appropriate requirements given in Part 1 and the individual types of cable shall each comply with the particular requirements of this Part 3.

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 cable with rigid conductor for general purposes(*)

2.1 Code designation

H07V-U, for cables with solid conductors;
H07V-R, for cables with stranded rigid conductors.

2.2 Rated voltage

450/750V.

Note: 600/1000V when this cable is used in fixed installations, with mechanical protection, within switchgear and controlgear : see HD 516.

2.3 Construction

2.3.1 Conductor

Number of conductors : 1

The conductors shall comply with the requirements of HD 383:

Class 1 for solid conductors;
Class 2 for stranded conductors.

2.3.2 Insulation

The insulation shall be polyvinyl chloride compound of Type TI 1, applied around the conductor.

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

The insulation resistance shall be not less than the value given in Part 3, Table I, column 6.

(*) This cable type is similar to type 227 IEC 01 but has modified requirements.

2.3.3 Overall diameter

The mean overall diameter shall be within the limits given in Part 3, Table I, columns 4 and 5.

2.4 Tests

Compliance with the requirements of Part 3, sub-clause 2.3 shall be checked by inspection and by the tests given in Part 3, Table II.

2.5 Guide to use (Informative)

See HD 516

Table I

General data for types H07V-U and H07V-R

1	2	3	4	5	6
Nominal cross-sectional area of conductors (mm²)	Class of conductor (HD 383)	Thickness of insulation specified value (mm)	Mean overall diameter		Minimum insulation resistance at 70°C (Mohm.km)
			Lower limit (mm)	Upper limit (mm)	
1.5	1	0.7	2.6	3.2	0.011
1.5	2	0.7	2.7	3.3	0.010
2.5	1	0.8	3.2	3.9	0.010
2.5	2	0.8	3.3	4.0	0.009
4	1	0.8	3.6	4.4	0.0085
4	2	0.8	3.8	4.6	0.0077
6	1	0.8	4.1	5.0	0.0070
6	2	0.8	4.3	5.2	0.0065
10	1	1.0	5.3	6.4	0.0070
10	2	1.0	5.6	6.7	0.0065
16	2	1.0	6.4	7.8	0.0050
25	2	1.2	8.1	9.7	0.0050
35	2	1.2	9.0	10.9	0.0043
50	2	1.4	10.6	12.8	0.0043
70	2	1.4	12.1	14.6	0.0035
95	2	1.6	14.1	17.1	0.0035
120	2	1.6	15.6	18.8	0.0032
150	2	1.8	17.3	20.9	0.0032
185	2	2.0	19.3	23.3	0.0032
240	2	2.2	22.0	26.6	0.0032
300	2	2.4	24.5	29.6	0.0030
400	2	2.6	27.5	33.2	0.0028

Table II

Tests for Types H07V-U and H07V-R

1	2	3	4	5
Ref. No.	Tests	Category of test	Test Method described in	
			HD	Clause
1.	Electrical tests			
1.1	Resistance of conductors	T, S	21.2	2.1
1.2	Voltage test at 2500V	T, S	21.2	2.2
1.3	Insulation resistance at 70°C	T, S	21.2	2.4
1.4	Long term resistance of insulation to d.c.	T	21.2	2.5
1.5	Absence of faults in insulation	R	21.2	2.6
2.	Provisions covering constructional and dimensional characteristics			
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.	Mechanical properties of insulation			
3.1	Tensile test before ageing	T	505.1.1	9.1
3.2	Tensile test after ageing	T	505.1.2	8.1.3.1
3.3	Loss of mass test	T	505.3.2	8.1
4.	Pressure test at high temperature	T	505.3.1	8.1
5.	Tests at low temperature			
5.1	Bending test for insulation (+)	T	505.1.4	8.1
5.2	Elongation test for insulation (*)	T	505.1.4	8.3
5.3	Impact test for insulation	T	505.1.4	8.5
6.	Heat shock test	T	505.3.1	9.1
7.	Test under fire conditions	T	405.1	-

(+) Only applicable to cores having mean overall diameters up to and including 12.5mm
(*) Only applicable if the mean overall outer diameter of the core exceeds 12.5mm