



SLOVENSKI STANDARD

SIST HD 22.6 S2:1998

01-februar-1998

**Kabli z gumijasto izolacijo za naznačene napetosti do vključno 450/750 V - 6. del:
Kabli za oblačno varjenje**

Cables of rated voltages up to and including 450/750 V and having cross-linked insulation - Part 6: Arc welding cables

Starkstromleitungen mit vernetzter Isolierhülle für Nennspannungen bis 450/750 V -- Teil 6: Lichtbogenschweißleitungen

Conducteurs et câbles isolés avec des matériaux réticulés de tension assignée au plus égale à 450/750 V -- Partie 6: Câbles de soudage à l'arc

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Ta slovenski standard je istoveten z: HD 22.6 S2:1995

ICS:

29.060.20 Kabli Cables

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HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 22.6 S2

June 1995

ICS 29.060.20

Supersedes HD 22.6 S1:1990 and its amendment

Descriptors: Arc-welding, electrode holder, insulated cable, flexible cable, insulation, vulcanised rubber, particular specification, dimension, test

English version

**Rubber insulated cables of rated voltages
up to and including 450/750 V
Part 6: Arc welding cables**

Conducteurs et câbles isolés au
caoutchouc, de tension assignée au plus
égale à 450/750 V
Partie 6: Câbles de soudage à l'arc

Isolierte Starkstromleitungen mit einer
Isolierung aus Gummi mit
Nennspannungen bis 450/750 V
Teil 6: Lichtbogenschweißleitungen

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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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

HD22 was originally adopted by CENELEC on 9th July 1975.

Edition 2 of HD22 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 22.6 has been introduced to cover the complete revision of the overall dimensions in line with EN 60719, and was approved by TC20 at its Helsinki meeting in May 1994.

HD22 now has the following parts:

- HD22.1 S2 - General requirements (with AM1 to AM10)
- HD22.2 S2 - Test methods (with AM1 to AM4 inclusive)
- HD22.3 S3 - Heat resistant silicone rubber insulated cables
- HD22.4 S3 - Cords and flexible cables
- HD22.5 - (Spare)
- HD22.6 S2 - Arc welding cables
- HD22.7 S2 - Cables with increased heat resistance for internal wiring for a conductor temperature of 110°C
- HD22.8 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

In order that this revision of Part 6 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 22.6 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 22.6 S1:1990 and its amendment A1:1992 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 (Part 6) of the HD details the particular specifications for arc welding cables of rated voltage 100/100V for connections between the industrial welding power source and the electrode holder and the work piece.

All cables shall comply with the appropriate requirements given in Part 1 and the individual types of cables shall each comply with 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. Hand electrode cable

2.1 Code designation

H01N2-D for cables with normal flexibility*
H01N2-E for cables with extra-high flexibility

2.2 Rated voltage

100/100 V

2.3 Construction

2.3.1 Conductor

Number of conductors: 1.

The conductors shall comply with the requirements given in Part 6 Tables I and II, columns 2, 6 and 7.

The conductor shall consist of annealed copper. The wires may be plain or tinned.

2.3.2 Separator

A separator of suitable material shall be applied around the conductor.

2.3.3 Covering

The covering shall be applied by extrusion around the conductor and may consist of one or two layers.

Covering in one layer shall be rubber compound of type EM 5.

* This type is similar to type 245 IEC 82 but has modified requirements

Covering in two layers shall comprise an outer layer of rubber compound of type EM 5 and an inner layer which shall be either rubber compound of type EM5 or rubber compound of type EI 7. The ratio of the thicknesses of the two layers is not specified.

Samples for non-electrical tests on covering in two layers shall be prepared and tested in accordance with Part 1, sub-clause 5.5.2.2.

Full testing shall be carried out on both layers, except where the resulting sample from the inner layer is below 0.8mm thickness. In this case full testing shall be carried out on the outer layer, but only the hot set test shall be carried out on the inner layer.

The thickness of the covering in one layer or the combined thickness of covering in the two layers shall comply with the specified value given in Part 6, Tables I and II.

2.3.4 Overall diameter

The mean overall diameter shall be within the limits given in Part 6, Tables I and II, columns 4 and 5.

2.3.5 Marking

Each of the cable types listed in sub-clause 2.1 of this Part shall be distinguished by marking, either by printing or embossing on or indenting into, the covering.

The marking for each cable type shall consist of:

- the designation (as given in sub-clause 2.1)
- the cross-sectional area of the conductor

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2.4 Tests

Compliance with the requirements of Part 6, sub-clause 2.3 shall be checked by inspection and by the tests given in Part 6, Table III.

2.5 Guide to use (informative)

See HD 516

Table I

General data for Types H01N2-D

1	2	3	4	5	6	7
Nominal cross-sectional area of conductor	Maximum diameter of wires in conductor	Thickness of covering. Specified value	Mean overall diameter		Maximum conductor resistance at 20°C ⁽¹⁾	
			Lower limit	Upper limit	Tinned wires	Untinned wires
(mm ²)	(mm)	(mm)	(mm)	(mm)	(Ohm/km)	
10	0.21	2.0	7.7	9.7	1.95	1.91
16	0.21	2.0	8.8	11.0	1.24	1.21
25	0.21	2.0	10.1	12.7	0.795	0.780
35	0.21	2.0	11.4	14.2	0.565	0.554
50	0.21	2.2	13.2	16.5	0.393	0.386
70	0.21	2.4	15.3	19.2	0.277	0.272
95	0.21	2.6	17.1	21.4	0.210	0.206
120	0.51	2.8	19.2	24.0	0.164	0.161
150	0.51	3.0	21.1	26.4	0.132	0.129
185	0.51	3.2	23.1	28.9	0.108	0.106

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Table II

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General data for Type H01N2-E

1	2	3	4	5	6	7
Nominal cross-sectional area of conductor	Maximum diameter of wires in conductor	Thickness of covering. Specified value	Mean overall diameter		Maximum conductor resistance at 20°C ⁽¹⁾	
			Lower limit	Upper limit	Tinned wires	Untinned wires
(mm ²)	(mm)	(mm)	(mm)	(mm)	(Ohm/km)	
10	0.16	1.2	6.2	7.8	1.95	1.91
16	0.16	1.2	7.3	9.1	1.24	1.21
25	0.16	1.2	8.6	10.8	0.795	0.780
35	0.16	1.2	9.8	12.3	0.565	0.554
50	0.16	1.5	11.9	14.8	0.393	0.386
70	0.16	1.5	13.6	17.0	0.277	0.272
95	0.16	1.8	15.6	19.5	0.210	0.206
120	0.21	1.8	17.2	21.6	0.164	0.161
150	0.21	1.8	18.8	23.5	0.132	0.129
185	0.21	1.8	20.4	25.5	0.108	0.106

NOTE: ⁽¹⁾ Conductor resistance is in accordance with HD 383 Class 6

Table III
Tests for Types H01N2-D and H01N2-E

1	2	3	4	5
Ref. No.	Tests	Category of test	Test method described in	
			HD	Clause
1.	<u>Electrical tests</u>			
1.1	Resistance of conductors	T, S	22.2	2.1
1.2	Voltage test at 1000 V on completed cable	T, S	22.2	2.2
2.	<u>Provisions covering constructional and dimensional characteristics</u>			
2.1	Checking of compliance with constructional provisions	T, S	22.1	Inspection and manual tests
2.2	Measurement of thickness of covering	T, S	22.2	1.9
2.3	Measurement of overall diameter	T, S	22.2	1.11
3.	<u>Mechanical properties of covering⁽¹⁾</u>			
3.1	Tensile test before ageing	T	505.1.1	9.2
3.2	Tensile test after ageing in the air oven	T	505.1.2	8.1.3.1
3.3	Tensile test after immersion in oil	T	505.2.1	10
3.4	Hot set test	T	505.2.1	9
4.	<u>Mechanical strength of completed cable</u>			
4.1	Static flexibility test	T	22.2	3.2
4.2	Low temperature test	T	under consideration	under consideration
5.	<u>Test under fire conditions</u>	T	405.1	-
6.	<u>Test of the resistance to hot particles</u>	T	22.2	5

⁽¹⁾ See sub-clause 2.3.3 in respect of tests on coverings in two layers.