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**Električni kabli - Nizkonapetostni energetski kabli z nazivno napetostjo do vključno 450/750 V (U0/U) - 2-81. del: Kabli za splošno uporabo - Kabli za oblačno varjenje z zamreženo elastomerno prevleko**

Electric cables - Low voltage energy cables of rated voltages up to and including 450/750 V (U0/U) - Part 2-81: Cables for general applications - Cables with crosslinked elastomeric covering for arc welding

Kabel und Leitungen - Starkstromleitungen mit Nennspannungen bis 450/750 V (U0/U) - Teil 2-81: Starkstromleitungen für allgemeine Anwendungen - Lichtbogenschweißleitungen mit vernetzter Elastomer- Hülle

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Câbles électriques - Câbles d'énergie basse tension de tension assignée au plus égale à 450/750 V (U0/U) - Partie 2-81: Câbles pour applications générales - Câbles pour soudage à l'arc isolés en matériau élastomère réticulé

**Ta slovenski standard je istoveten z: EN 50525-2-81:2011**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 50525-2-81**

May 2011

ICS 29.060.20

Supersedes HD 22.6 S2:1995 + corr. Jun.1995 + A1:1999 + A2:2004

English version

**Electric cables -  
Low voltage energy cables of rated voltages up to and including 450/750 V  
( $U_0/U$ ) -  
Part 2-81: Cables for general applications -  
Cables with crosslinked elastomeric covering for arc welding**

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**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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## Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the formal vote and was accepted by CENELEC as EN 50525-2-81 on 2011-01-17.

This document, which is one of a multipart series, supersedes HD 22.6 S2:1995 + A1:1999 + A2:2004.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-01-17
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-01-17

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## 1 Scope

This European Standard applies to single core, crosslinked elastomer covered arc welding cables.

The cables are of rated voltage  $U_0/U$  100/100 V.

The cables are intended for connections between the welding power source and the electrode holder and the work piece.

Two types of cable are included, with respectively Class D and Class E conductors. These conductors are more flexible than Class 6 to EN 60228, with Class E having the greater flexibility.

The maximum conductor operating temperature for each of the cables in this standard is 85 °C.

NOTE HD 516 contains extensive guidance on the safe use of cables in this standard, and gives specific current ratings and volt drop data.

This EN 50525-2-81 should be read in conjunction with EN 50525-1, which specifies general requirements.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE One or more references to the standards below are in respect of a specific sub-division of that standard, for instance a clause, a table, a class or a type. Cross-references to these standards are undated and, at all times, the latest version shall apply.

|              |  |
|--------------|--|
| EN 50363-1   | Insulating, sheathing and covering materials for low voltage energy cables – Part 1: Cross-linked elastomeric insulating compounds   |
| EN 50363-2-2 | Insulating, sheathing and covering materials for low voltage energy cables – Part 2-2: Cross-linked elastomeric covering compounds   |
| EN 50395     | Electrical test methods for low voltage energy cables  |
| EN 50396     | Non electrical test methods for low voltage energy cables  |
| EN 50525-1   | Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V ( $U_0/U$ ) – Part 1: General requirements   |
| EN 60228     | Conductors of insulated cables (IEC 60228)   |
| EN 60332-1-2 | Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame (IEC 60332-1-2) |
| EN 60811-1-4 | Insulating and sheathing materials of electric and optical cables – Common test methods – Part 1-4: General application – Tests at low temperature (IEC 60811-1-4)   |

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of EN 50525-1 apply.

## 4 Arc welding cables – H01N2-D and H01N2-E

### 4.1 Construction

#### 4.1.1 Conductor

The conductor shall be copper, and generally in accordance with class 6 to EN 60228, except that the maximum diameter of wires in a conductor shall comply with the requirements given in column 2 of Table B.1 for cables with normal flexibility, or of Table B.2 for cables with extra high flexibility.

NOTE The individual wires of a conductor may be plain or tinned.

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

#### 4.1.2 Size of cable

The cable shall consist of a single conductor in accordance with Table B.1 or Table B.2, in sizes from 10 mm<sup>2</sup> to 240 mm<sup>2</sup>.

#### 4.1.3 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 material type EM 5 to EN 50363-2-2.

Covering in two layers shall comprise an outer layer of material type EM 5 to EN 50363-2-2 and an inner layer which shall be either of type EM 5 or of material type EI 7 to EN 50363-1. The ratio of the thicknesses of the two layers is not specified, but the minimum thickness of the outer layer shall not be less than 0,6 mm.

#### 4.1.4 Marking

The cable shall be marked with the CENELEC code H01N2-D for cables with normal flexibility, or H01N2-E for cables with extra high flexibility. In addition, the cross-sectional area of the conductor shall be marked. The marking shall comply with Clause 6 of EN 50525-1.

### 4.2 Requirements

#### 4.2.1 General

Each cable shall comply with the appropriate requirements given in EN 50525-1, and the particular requirements of this Part.

Testing shall be in accordance with Annex A.

The conductor resistance shall not exceed the relevant value given in column 6 or 7 of Table B.1 or Table B.2 as appropriate.

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 column 3 of either Table B.1 or Table B.2 as appropriate.

The dimensions of the cables shall be within the limits specified in columns 4 and 5 of either Table B.1 or Table B.2 as appropriate.

The requirements for the voltage test at 1 000 V on completed cables shall be in accordance with Annex C.

The requirements for the static flexibility test on completed cables shall be in accordance with Annex D.

#### **4.2.2 Two-layer coverings**

Samples for non-electrical tests on covering in two layers shall be prepared and tested in accordance with EN 50525-1, 5.7.2.3, c).

Full testing shall be carried out on both layers, except where the resulting sample from the inner layer is below 0,8 mm 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.

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## Annex A (normative)

### Tests for cables to EN 50525-2-81

Table A.1

| 1  | 2   | 3                | 4                                     | 5                           |
|--|---|------------------|---------------------------------------|-----------------------------|
| Ref No.  | Tests <sup>a</sup>                                    | Category of test | Test method described in              |                             |
|  |   |                  | EN                                    | (Sub)clause                 |
| <b>1</b>   | <b>Electrical tests <sup>b</sup></b>                  |                  |                                       |                             |
| 1.1  | Resistance of conductors                              | T, S             | 50395                                 | 5                           |
| 1.2  | Voltage test at 1 000 V <sup>c</sup>                  | T, S             | 50395                                 | 6                           |
| 1.3  | Absence of faults in covering                         | R                | 50395                                 | 10.2                        |
| <b>2</b>   | <b>Constructional and dimensional tests</b>           |                  |                                       |                             |
| 2.1  | Checking of compliance with constructional provisions | T, S             | 50525-1                               | Inspection and manual tests |
| 2.2  | Measurement of thickness of covering                  | T, S             | 50396                                 | 4.1                         |
| 2.3  | Measurement of overall diameter                       | T, S             | 50396                                 | 4.4                         |
| <b>3</b>   | <b>Covering material tests <sup>d</sup></b>           | T                | 50363-1 and<br>50363-2-2 <sup>e</sup> | -                           |
| <b>4</b>   | <b>Static flexibility test</b>                        | T                | 50396                                 | 6.1                         |
| <b>5</b>   | <b>Impact test at - 20 °C</b>                         | T                | 60811-1-4                             | 8.5                         |
| <b>6</b>   | <b>Test for resistance to hot particles</b>           | T                | 50396                                 | 7.1                         |
| <b>7</b>   | <b>Test under fire conditions</b>                     | T                | 60332-1-2                             | -                           |
| <p><sup>a</sup> All tests are applicable to these cables. The order given does not imply a sequence of testing.</p> <p><sup>b</sup> Particular test conditions and requirements are given in Table 1 of EN 50525-1.</p> <p><sup>c</sup> See also Annex C.</p> <p><sup>d</sup> See 4.2.2 of this EN 50525-2-81 in respect of tests and requirements for coverings in two layers.</p> <p><sup>e</sup> These ENs includes all the test methods and requirements for the material. Material to be tested is taken from the finished cable.</p> |   |                  |                                       |                             |