

# SLOVENSKI STANDARD

## SIST EN 10257-1:2012

01-januar-2012

Nadomešča:  
SIST EN 10257-1:2000

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### S cinkom ali cinkovimi zlitinami prevlečena žica iz nelegiranega jekla za armiranje močnostnih in telekomunikacijskih kablov - 1. del: Zemeljski kabli

Zinc or zinc alloy coated non-alloy steel wire for armouring either power cables or telecommunication cables - Part 1: Land cables

Mit Zink oder Zinklegierung überzogener unlegierter Stahldraht zur Bewehrung von Strom- und Fernmeldekabeln- - Teil 1: Erdverlegte Kabel

Fils en acier non allié, revêtu de zinc ou d'alliage de zinc, pour armure de câbles destinés au transport d'énergie ou aux télécommunications - Partie 1: Câbles terrestres

Ta slovenski standard je istoveten z: **EN 10257-1:2011**

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#### **ICS:**

29.060.20	Kabli	Cables
77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains

**SIST EN 10257-1:2012** en

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 10257-1**

October 2011

ICS 77.140.65

Supersedes EN 10257-1:1998

English Version

## Zinc or zinc alloy coated non-alloy steel wire for armouring either power cables or telecommunication cables - Part 1: Land cables

Fils en acier non allié revêtus de zinc ou d'alliage de zinc pour l'armure des câbles destinés au transport d'énergie ou aux télécommunications - Partie 1: Câbles terrestres

Mit Zink oder Zinklegierung überzogener unlegierter Stahldraht zur Bewehrung von Strom- und Fernmeldekabeln - Teil 1: Erdverlegte Kabel

This European Standard was approved by CEN on 10 September 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## Foreword

This document (EN 10257-1:2011) has been prepared by Technical Committee ECISS/TC 106 “Wire rod and wires”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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

This document supersedes EN 10257-1:1998.

The European Standard will comprise the following parts:

- *Part 1: Land cables;*
- *Part 2: Submarine cables.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 10257-1:2011 (E)****1 Scope**

This European Standard specifies requirements for the properties of non-alloy carbon zinc or zinc alloy coated steel wire used primarily for the armouring of either subterranean land power or telecommunication cables.

**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.

EN 10021, *General technical delivery conditions for steel products*

EN 10204, *Metallic products — Types of inspection documents*

EN 10218-1, *Steel wire and wire products — General — Part 1: Test methods*

EN 10244-1, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

EN 10244-2:2009, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc or zinc alloy coatings*

EN ISO 16120-1, *Non-alloy steel wire rod for conversion to wire - Part 1: General requirements (ISO 16120-1:2011)*

EN ISO 16120-2, *Non-alloy steel wire rod for conversion to wire - Part 2: Specific requirements for general-purpose wire rod (ISO 16120-2:2011)*

EN ISO 16120-3, *Non-alloy steel wire rod for conversion to wire - Part 3: Specific requirements for rimmed and rimmed substitute, low-carbon steel wire rod (ISO 16120-3:2011)*

IEC 60468, *Method of measurement of resistivity of metallic materials*

**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

**3.1****coil**

reel

spool

continuous length of wire wound in approximately concentric rings

**3.2****batch**

quantity of finished wire presented for examination and tested at any one time

**4 Information to be supplied by the purchaser**

When ordering wire to this European Standard, the purchaser shall specify:

a) designation (see Clause 5);

- b) quantity in appropriate units;
- c) unit weight of coils (kg);
- d) instructions for strapping and packaging;
- e) surface condition (see Clause 7.3);
- f) agreed quality characteristics (see Clause 8);
- g) inspection document requirements.

And if required:

- h) coating uniformity;
- i) electrical resistance;
- j) identity for traceability.

## 5 Designation

The steel wire for land cable shall be designated by:

- a) number of this European Standard i.e. EN 10257-1;
- b) nominal wire diameter;
- c) wire coating type to EN 10244-2.

EXAMPLE Steel wire for land cable to EN 10257-1 of nominal wire diameter of 0,45 mm, zinc coated to EN 10244-2:2009, class A:

EN 10257-1-0,45 - Zn - EN 10244-2:2009, class A.

## 6 Manufacture

### 6.1 Non-alloy steel

The steel wire shall be cold drawn from plain carbon steel rod produced to EN 10016-1, EN 10016-2 or EN 10016-3 and capable of achieving the physical properties required by this standard. The steel rod shall be capable of being satisfactorily butt welded.

### 6.2 Welds in coils

The coils as delivered, shall contain no joints other than properly dressed welds, i.e. the original wire diameter shall be retained.

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## 7 Requirements

## 7.1 Mechanical properties

## 7.1.1 Tensile strength and elongation

The tensile strength and elongation of the wires shall be in accordance with Table 1. The variation within one batch shall not be more than 150 N/mm<sup>2</sup>.

Table 1 — Mechanical properties

Nominal wire diameter mm	Tensile strength N/mm <sup>2</sup>	Elongation after fracture %
$d \leq 0,70$	320 to 500	7,5
$0,70 < d \leq 0,90$	340 to 500	7,5
$d > 0,90$	340 to 500	10,0

## 7.1.2 Torsion

The wire shall withstand without breaking, not less than the minimum number of turns given in Table 2.

These minima are based on 40 turns in a gauge length of 100  $d$ , where  $d$  is greater than 0,71 and less than or equal to 4,00 mm, and on 27 turns in 100  $d$  for sizes equal or smaller than 0,71 mm where  $d$  is the wire diameter.

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Table 2 — Minimum number of turns to fracture  
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Nominal wire diameter mm	Gauge length mm	Minimum number of turns
0,30	50	45
0,45	75	45
0,71	75	42
0,90	75	33
1,25	75	24
1,60	150	37
2,00	150	30
2,50	150	24
3,15	150	19
4,00	150	15

## 7.2 Nominal diameter and tolerances

The preferred nominal diameters of finished wire and the tolerances on diameter are given in Table 3. Other diameters may be used, e.g. those specified in IEC 60502-1 or in IEC 60502-2.

NOTE The tolerances correspond to T1 of EN 10218-2:1996, Table 1.



It is recognised that thick coatings, obtained in the hot dip process, may not be entirely free from surface irregularities, and, provided the latter do not go beyond the limits of good practice (i.e. isolated and not of a repetitive nature), they shall not be a cause for rejection. Persistent lumpy galvanizing or bambooing shall be cause for rejection.

**Table 3 — Nominal diameters and tolerances**

Nominal wire diameter mm	Tolerance on diameter mm
0,30	± 0,025
0,45	± 0,025
0,71	± 0,030
0,90	± 0,035
1,25	± 0,040
1,60	± 0,045
2,00	± 0,050
2,50	± 0,060
3,15	± 0,070
4,00	± 0,070

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### 7.3 Coating, adhesion and surface finish

The wire shall be zinc or zinc alloy coated either by the hot dip or the electrolytic process, in accordance with EN 10244-2:2009 (Table 1 and Table 2), class A. The coating shall conform to the adherence test of EN 10244-1 and EN 10244-2. If required, the uniformity shall conform to EN 10244-2.

NOTE 1 The finished wire should be free from any defects likely to cause breakages in subsequent manufacturing processes or service, or likely to adversely affect the finished cables. The wire is usually supplied as zinc or zinc alloy coated. Additionally further coatings with a special finish (e.g. wax or surface compatible with bitumen) may be supplied by agreement between manufacturer and customer.

NOTE 2 Where the design of the cable allows, as specified in the relevant cable product standard, other zinc or zinc alloy classes may be specified.

### 7.4 Electrical resistance

Where requested, the electrical resistance of the armour shall be determined.

This result, expressed in ohm per kilometre of wire, shall not exceed the appropriate value given in Table 4.

If the d.c. resistance of the coated wire is measured at a room temperature ( $T/^\circ\text{C}$ ) other than  $20^\circ\text{C}$ , it shall be corrected to  $20^\circ\text{C}$  using the temperature coefficient  $(1 + 0,005 (T-20)^\circ\text{C})$ .