



**SLOVENSKI STANDARD**  
**SIST EN 10244-5:2002**  
**01-september-2002**

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B]`Yj`Y`dfYj`Y`Y`

Steel wire and wire products - Non-ferrous metallic coatings on steel wire - Part 5: Nickel coatings

Stahldraht und Drahterzeugnisse - Überzüge aus Nichteisenmetall auf Stahldraht - Teil 5: Überzüge aus Nickel

Fils et produits tréfilés en acier - Revêtements métalliques non ferreux sur fils d'acier - Partie 5: Revêtements de nickel

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**Ta slovenski standard je istoveten z: EN 10244-5:2001**

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**ICS:**

25.220.40	Kovinske prevleke	Metallic coatings
77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains

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**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 10244-5**

March 2001

ICS 25.220.40

English version

## Steel wire and wire products - Non-ferrous metallic coatings on steel wire - Part 5: Nickel coatings

Fils et produits tréfilés en acier - Revêtements métalliques non ferreux sur fils d'acier - Partie 5: Revêtements de nickel

Stahldraht und Drahterzeugnisse - Überzüge aus Nichteisenmetall auf Stahldraht - Teil 5: Überzüge aus Nickel

This European Standard was approved by CEN on 21 January 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 30 "Steel wires", the secretariat of which is held by BSI.

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 September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

This European Standard for non-ferrous metallic coating on steel wire is made up of the following parts:

Part 1 : General principles

Part 2 : Zinc and zinc alloy coatings

Part 3 : Aluminium coatings

Part 4 : Tin coatings

Part 5 : Nickel coatings

Part 6 : Copper, bronze and brass coatings

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This part of this European Standard specifies the requirements for the mass; other properties and testing of nickel coatings on steel wire and steel wire products of round or other cross-section.

## 2 Normative reference

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 10244-4, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 4: Tin coatings*

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## 3 Term and definition (standards.iteh.ai)

For the purposes of this European standard the following term and definition apply.

### 3.1

#### wire with nickel coating

wire to which a nickel coating has been applied by electrolytic deposition, either before drawing or when the final dimension has been obtained

## 4 Requirements relating to coating

### 4.1 Material

The nickel coating shall be made of pure non-alloy nickel; the tolerated quantity of impurities shall be maximum 2 %

### 4.2 Mass of coating

The coating mass, when required, shall be agreed at the time of enquiry and order or according to the product standard.

### 4.3 General requirements

See the requirements in EN 10244-1.

## 5 Test conditions

### 5.1 Samples

#### 5.1.1 General

See the general requirements in EN 10244-1.

#### 5.1.2 Length of samples

The length of the samples shall be sufficient to allow all the necessary tests to be carried out.

### 5.2 Determination of mass of coating

#### 5.2.1 General

The mass of the coating shall be determined using the gravimetric method or using an atomic absorption spectrometer. For the gravimetric method, the sample length shall in accordance with Table 1 in EN 10244-4.

#### 5.2.2 Gravimetric method

##### 5.2.2.1 Procedure

If necessary, degrease the sample with a suitable solvent. Weigh the sample to an accuracy of 0,1 mg.(mass  $m_1$ ).

Strip the samples in concentrated nitric acid ( $\text{HNO}_3$ ) with a density of 1,4 at 20 °C.

After stripping, rinse the samples, dry them and once again weigh them to the same accuracy (mass  $m_2$ ). If the mass difference is less than 10 mg, repeat the test with a suitably longer sample.

Determine the diameter of the wire.

##### 5.2.2.2 Calculation of mass of coating

The calculation shall be carried out in accordance with EN 10244-1 using the following formula:

$$Ni(g/m^2): \frac{(m_1 - m_2) \times d \times 1962}{m_2}$$

### 5.2.3 Use of atomic absorption spectrometer

Given the aggressive nature of the stripping solution, the gravimetric method does not give completely accurate figures. A more accurate method involves determining the quantity of nickel in a defined volume of pickling solution using an atomic absorption spectrometer.

NOTE The possible error in using the gravimetric method may be smaller with high carbon steels than with low carbon steels, which may be vigorously attacked.

### 5.3 Adherence test

The adherence test shall be carried out in accordance with EN 10244-1 using a mandrel with a diameter three times the diameter of the wire. Under these conditions, the nickel coating shall show no signs of flaking.

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