



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 10270-3:2011

**Steel wire for mechanical springs - Part
3: Stainless spring steel wire**

Fils en acier pour ressorts mécaniques -
Partie 3: Fils en acier inoxydable

Stahldraht für Federn - Teil 3:
Nichtrostender Federstahldraht

10/2011



National Foreword

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EUROPEAN STANDARD ^{ILNAS-EN 10270-3:2011} **EN 10270-3**
NORME EUROPÉENNE
EUROPÄISCHE NORM

October 2011

ICS 77.140.25; 77.140.65

Supersedes EN 10270-3:2001

English Version

**Steel wire for mechanical springs - Part 3: Stainless spring steel
wire**

Fils en acier pour ressorts mécaniques - Partie 3: Fils en
acier inoxydable

Stahldraht für Federn - Teil 3: Nichtrostender
Federstahldraht

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

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Foreword

This document (EN 10270-3:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.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 10270-3:2001.

This European Standard for steel wire for mechanical springs is composed of the following parts:

- *Part 1: Patented cold drawn unalloyed spring steel wire;*
- *Part 2: Oil hardened and tempered spring steel wire;*
- *Part 3: Stainless spring steel wire.*

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.

1 Scope

1.1 This European Standard applies to the grades of stainless steels listed in Table 1, which are usually used in the cold drawn condition in the form of wire of circular cross-section up to 10,00 mm in diameter, for the production of springs and spring parts that are exposed to corrosive effects and sometimes to slightly increased temperatures (see A.1).

1.2 In addition to the steels listed in Table 1 certain of the steel grades covered by EN 10088-3 e.g. 1.4571, 1.4539, 1.4028 are also used for springs, although to much lesser extent. In these cases the mechanical properties (tensile strength, etc.) should be agreed between purchaser and supplier. Similarly, diameters between 10,00 mm and 15,00 mm may be ordered according to this standard; in this case the parties should agree upon the required mechanical characteristics.

1.3 In addition to this European Standard the general technical delivery requirements of EN 10021 are applicable.

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 10027-1:2005, *Designation systems for steels — Part 1: Steel names*

EN 10027-2:1992, *Designation systems for steels — Part 2: Numerical system*

EN 10088-3, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods and sections for general purposes*

EN 10204:2004, *Metallic products — Types of inspection documents*

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

EN 10218-2, *Steel wire and wire products — General — Part 2: Wire dimensions and tolerances*

CEN/TR 10261, *Iron and steel — Review of available methods of chemical analysis*

EN ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing (ISO 377:1997)*

EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2009)*

EN ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

3 Information to be supplied by the purchaser

The purchaser shall clearly state in his enquiry or order the product and following information:

a) the desired quantity;

- b) the term spring steel wire or straightened and cut lengths;
- c) the number of this European Standard: EN 10270-3;
- d) the steel grade (see Table 1) and for grade 1.4301, 1.4310 and 1.4462 also the tensile strength level (see Table 2);
- e) the nominal wire diameter (see Table 4) and for cut length the length and the length tolerance class (see Table 6);
- f) the surface finish (see 4.3, i.e. coating);
- g) the form of delivery (see 4.2);
- h) the type of inspection document to be supplied (see 5.1);
- i) any particular agreement made.

EXAMPLE 2 t stainless steel spring wire according to this standard, grade 1.4310, normal tensile strength level and nominal diameter 2,50 mm, nickel coated in coils with inspection document 3.1 according to EN 10204:2004:

2 t spring steel wire EN 10270-3 – 1.4310-NS – 2,50 - Ni-coated in coils, EN 10204:2004 – 3.1

4 Requirements

4.1 Manufacturing process

Unless otherwise agreed in the order, the manufacturing process used in the making of the stainless steel wire is left to the discretion of the manufacturer. The starting condition (+AT: solution annealed) of the wire (rod) is specified in EN 10088-3.

4.2 Form of delivery

The wire shall be supplied in coils, on spools, on spoolless cores or carriers. Several coils may be assembled on a carrier. Unless otherwise specified the form of delivery shall be at the manufacturer's discretion. They shall however inform the purchaser about the form of delivery.

The delivery requirements are specified in 4.7.

Wire in straight lengths is normally supplied in bundles.

4.3 Surface finish

The wire may be coated or not. The specific coating and finish for stainless steel spring wire shall be agreed upon at the time of enquiry and order - e.g. uncoated, polished finish, nickel coated.

4.4 Chemical composition

4.4.1 The requirements for the chemical composition given in Table 1 apply to the heat analysis.

4.4.2 The permissible deviation of the product analysis from the values specified in Table 1 shall be in accordance with the provision in EN 10088-3. For a single heat the deviation of an element in the product analysis may be only below the minimum or only above the maximum value of the range specified for the heat analysis, but not both at the same time.