



SLOVENSKI STANDARD
oSIST prEN 10270-2:2008

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Steel wire for mechanical springs - Part 2: Oil hardened and tempered spring steel wire

Stahldraht für Federn - Teil 2: Ölschlussvergüteter Federstahldraht

Fils en acier pour ressorts mécaniques - Partie 2: Fils en acier trempés à l'huile et revenus

Ta slovenski standard je istoveten z: prEN 10270-2

ICS:

77.140.25	Vzmetna jekla	Spring steels
77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains

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Steel wire for mechanical springs - Part 2: Oil hardened and tempered spring steel wire

Fils en acier pour ressorts mécaniques - Partie 2: Fils en acier trempés à l'huile et revenus

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Foreword

This document (prEN 10270-2:2008) has been prepared by Technical Committee ECISS/TC 30 "Steel wires", the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 10270-2:2001.

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*

prEN 10270-2:2008 (E)**1 Scope**

1.1 This Part of EN 10270 applies to oil hardened and tempered spring steel wire made from unalloyed or alloyed steels. They are primarily subject to torsional stresses such as in compression and extension springs and in special cases also for applications where the spring wire is subject to bending stresses such as lever springs.

As a rule unalloyed steels are used for applications at room temperature whereas alloyed steels are generally used at a temperature above room temperature. Alloyed steels may also be chosen for above average tensile strengths.

1.2 In addition to this part of EN 10270 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 10002-1, *Metallic materials — Tensile test — Part 1: Method of test at ambient temperature.*

EN 10021, *General technical delivery requirements 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 10218-2, *Steel wire and wire products — General — Part 2: Wire dimensions and tolerances.*

ENV 10247, *Micrographic examination of the non-metallic inclusion content of steels using standard pictures.*

CR 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.*

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

EN ISO 3887, *Steels — Determination of depth of decarburization.*

3 Terms and definitions

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

3.1**oil hardened and tempered spring steel wire**

wire that is heat treated in line in the following way: it is first transformed into austenite, quenched in oil or similar quenching medium, followed immediately by tempering by heating to the appropriate temperature

4 Classification and designation

4.1 Classification

This standard deals with all types of hardened and tempered spring steel wire. The grade for normal applications made from unalloyed or alloyed steel has the abbreviation FD and is intended for static applications.

Spring steel wire for medium fatigue levels, such as required for some clutch springs from unalloyed or alloyed steel, has the abbreviation TD.

Spring steel wire from unalloyed steel or alloyed steel intended for use under severe dynamic duty such as for valve springs or other springs with similar requirements has the abbreviation VD.

The diameter ranges for the various wire grades are shown in Table 1.

Table 1 — Spring wire grades

Tensile strength	Static	Medium fatigue	High fatigue
Low tensile strength	FDC	TDC	VDC
Medium tensile strength	FDCrV	TDCrV	VDCrV
High tensile strength	FDSiCr	TDSiCr	VDSiCr
Very high tensile strength	FDSiCrV	TDSiCrV	VDSiCrV
Diameter range (mm)	0,50 - 17,00	0,50 - 10,00	0,50 - 10,00

Medium and high fatigue grades TD and VD are characterized by high steel cleanliness, specific chemical, mechanical and technological parameters and a well defined surface condition in relation to the allowable depth of surface defects and decarburization.

The static grade FD is characterized by its chemical, mechanical and technological characteristics as well as by a specified surface condition concerning surface defects and decarburization.

4.2 Designation

For products supplied according to this standard the designation shall state the following in the following order:

- the term: spring wire;
- the number of this European Standard: EN 10270-2;
- the abbreviation for the wire grade (see Table 1);
- the required nominal diameter selected from Table 4 or Table 5;

EXAMPLE Standard designation of an oil hardened and tempered steel spring wire according to this standard of wire grade VDC with a nominal diameter of 2,50 mm:

Spring wire EN 10270-2 - VDC - 2,50.

prEN 10270-2:2008 (E)**5 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 number of this European Standard: EN 10270-2;
- c) wire grade (see 4.1);
- d) the nominal wire diameter;
- e) the form of delivery and unit mass;
- f) the type of inspection document;
- g) any particular agreement made.

EXAMPLE 5 t spring wire EN 10270-2 - VDC - 2,50
 in coils of about 300 kg
 inspection document EN 10204 - 3.1.B.

6 Requirements**6.1 Form of delivery**

6.1.1 Oil hardened and tempered wire shall be supplied in coils, on spools or in cut lengths. The wire in coils or on spools shall form one continuous length. Wire in coil may also be supplied on carriers containing one or more coils.

For "VD" and "TD" grades no welds are permitted after the heat treatments preceding the final drawing operation; for "FD" grades no welds shall be made at finished size unless agreed otherwise between the parties.

6.1.2 The supplied wire units shall be tightly bound to ensure that wire spiral waps do not spring out unforeseen. The starting end shall be marked and at the coil ends the wire shall be covered with a protective cap.

6.2 Surface finish

The wire shall be protected against corrosion and mechanical damage. Unless otherwise specified the wire shall be delivered in slightly oiled condition.

6.3 Chemical composition

The steel is characterized by the heat analysis which shall be in accordance with the values of Table 2. The permissible deviation of the product analysis from the limiting values of heat analysis shall be in accordance with Table 3.