

## **Railway applications - Suspension components - Helical suspension springs, steel**

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Helical suspension springs, steel

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13298:2003 sisaldab Euroopa standardi EN 13298:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 15.04.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13298:2003 consists of the English text of the European standard EN 13298:2003.</p> <p>This document is endorsed on 15.04.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This European Standard is applicable to helical steel suspension springs used in the suspension of rail vehicles. It deals specially with cylindrical compression springs made from round section steel bars of constant diameter and with constant inclination of coiling</p>	<p><b>Scope:</b></p> <p>This European Standard is applicable to helical steel suspension springs used in the suspension of rail vehicles. It deals specially with cylindrical compression springs made from round section steel bars of constant diameter and with constant inclination of coiling</p>
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**ICS** 21.160, 45.060.01

**Võtmesõnad:** quality assurance, railroad cars, railroad vehicles, railway applications, railway vehicle components, railway vehicles, railways, screws, screws (bolts), shock absorbing springs, specification (approval), specifications, springiness, springs, steel springs, testing

ICS 21.160; 45.060.01

English version

## Railway applications - Suspension components - Helical suspension springs, steel

Applications ferroviaires - Eléments de suspension -  
Ressorts de compression hélicoïdaux, en acier

Bahnanwendungen - Federungselemente - Schrauben-  
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This European Standard was approved by CEN on 29 November 2002.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 13298:2003) has been prepared by Technical Committee CEN/TC 256 "Railway Applications" the secretariat of which is held by DIN.

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 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

In this European Standard the annexes A to E are normative.

The preparation of this European Standard started in early 1992 with the aim to integrate the existing documents such as UIC 822 (International Union of Railways) and internal documents of various railway companies into a concise standard.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard is applicable to helical steel suspension springs used in the suspension of rail vehicles.

It deals specially with cylindrical compression springs made from round section steel bars of constant diameter and with constant inclination of coiling.

It deals also with helical springs with different shapes (e.g. conical and/or inclination of coiling not constant and/or steel bar with other cross sections, etc.).

This standard gives guidance for:

- design;
- specification of technical and quality requirements;
- the approval procedure and quality assurance of production methods;
- the examinations and tests to be carried out;
- the delivery conditions.

## 2 Normative references

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 473, *Non-destructive testing – Qualification and certification of NDT personnel – General principles*.

EN 10002-1, *Metallic materials – Tensile testing – Part 1: Method of test at ambient temperature*.

EN 10045-1, *Metallic materials – Charpy impact test – Part 1: Test methods*.

EN 10083-1, *Quenched and tempered steels – Part 1: Technical delivery conditions of special steels*.

EN 10228-1, *Non-destructive testing of steel forgings – Part 1: Magnetic particle inspection*.

prEN 10089:1998, *Hot-rolled steels for quenched and tempered springs – Technical delivery conditions*.

EN ISO 2162-1:1996, *Technical product documentation – Springs – Part 1: Simplified representation (ISO 2162-1:1993)*.

EN ISO 2162-2:1996, *Technical product documentation – Springs – Part 2: Presentation of data for cylindrical helical compression springs (ISO 2162-2:1996)*.

EN ISO 2162-3, *Technical product documentation – Springs – Part: 3 Vocabulary (ISO 2162-3:1996)*.

EN ISO 4288, *Geometrical Product Specification (GPS) – Surface texture: Profile method - Rules and procedures for the assessment of surface texture (ISO 4288:1996)*.

EN ISO 10289, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates – Rating of test specimens and manufactured articles subjected to corrosion tests (ISO 10289:1999)*.

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

ISO 4967:1998, *Steel – Determination of content of non-metallic inclusions – Micrographic method using standard diagrams*.

ISO 9227, *Corrosion tests in artificial atmospheres – Salt spray tests*.

ISO/TR 10108, *Steel – Conversion of hardness values to tensile strength values*.

ISO 10209-1, *Technical product documentation – Vocabulary – Part 1: Terms relating to technical drawings: general and types of drawings (ISO 10209-1:1992)*.

EURONORM 103, *Iron and steel - Macrographic determination of the ferritic or austenitic grain size of steels*.

EURONORM 104, *Determination of the decarburization depth of unalloyed and low-alloy structural steels*.

UIC 515-4, *Passenger rolling stock - Trailer bogies - Running gear - Bogie frame structure strength test*<sup>1)</sup>.

DIN 50 602:1985, *Metallographic examination; microscopic examination of special steels using standard diagrams to assess the content of non-metallic inclusions*.<sup>2)</sup>

NF A 04-106:1984, *Iron and steel – Methods of determination of content of non metallic inclusions in wrought steel – Part II: Micrographic method using standard diagrams*.<sup>3)</sup>

SS 11 11 16: 1987, *Steel – Method for assessment of the content of non-metallic inclusions – Microscopic method – Jernkontoret's inclusion chart II for the assessment of non-metallic inclusions*.<sup>4)</sup>

### 3 Terms, symbols, units and their abbreviations

#### 3.1 Terms

For the purposes of this European Standard, the terms and definitions given in EN ISO 2162-3 and the following apply.

##### 3.1.1

##### **spring**

term "helical suspension spring, steel" refers to the finished product. For simplification purposes, in the text of the present standard, the term "spring" is used for all types of helical compression springs, made from steel, independent of their category

##### 3.1.2

##### **transverse deflection (bowing)**

natural transverse movement of the axis of the spring under an axial force, while the top and the bottom surface of the spring remain parallel and the spring is free to move laterally. The transverse force  $\Phi_c$  is the force required to move the spring back to the initial centred position

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<sup>1)</sup> Can be obtained from: UIC Direction Générale, 16 rue Jean Rey, F-75015 Paris.

<sup>2)</sup> Can be purchased from: Beuth Verlag GmbH, Burggrafenstr. 6, 10772 D-Berlin.

<sup>3)</sup> Can be purchased from: Association française de normalisation (AFNOR), 11, av. Francis de Pressensé, F-93571 Aint-Denis La Plaine CEDEX.

<sup>4)</sup> Can be purchased from: SIS-Standardiseringen i Sverige, box 64 55, S-11 3 82 Stockholm.