



SLOVENSKI STANDARD
SIST EN 10324:2004
01-november-2004

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Steel wire and wire products - Hose reinforcement wire

Stahldraht und Drahterzeugnisse - Schlaucharmierungsdraht

Fils et produits tréfilés en acier - Fil d'armature pour flexibles

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Ta slovenski standard je istoveten z: EN 10324:2004

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ICS:

77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 10324

September 2004

ICS

English version

Steel wire and wire products - Hose reinforcement wire

Fils et produits tréfilés en acier - Fil d'armature pour
flexibles

Stahldraht und Drahterzeugnisse -
Schlaucharmierungsdraht

This European Standard was approved by CEN on 1 July 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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Foreword

This document (EN 10324:2004) has been prepared by Technical Committee ECISS/TC 30 "Steel wire", 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of an identical text or by endorsement, at the latest by March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

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

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EN 10324:2004 (E)**1 Scope**

This document specifies the composition, dimensions and mechanical properties of high carbon steel wire for reinforcing high pressure hoses. It is applicable to wire used as a multiple parallel wire braided or spirally wrapped reinforcement in a rubber or synthetic hose which is made to withstand relatively high bursting pressure.

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 testing — Part 1: Method of test at ambient temperature*

EN 10016-1, *Non-alloy steel rod for drawing and/or cold rolling — Part 1: General requirements*

EN 10016-2, *Non-alloy steel rod for drawing and/or cold rolling — Part 2: Specific requirements for general purposes rod*

EN 10016-4, *Non-alloy steel rod for drawing and/or cold rolling — Part 4: Specific requirements for rod for special applications*

EN 10021, *General technical delivery requirements for steel and iron products*

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

EN 10218-1:1994, *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*

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

EN 10244-6, *Steel wire and wire products – Non-ferrous metallic coatings on steel wire – Part 6: Copper, bronze or brass coatings*

CR 10261, *ECISS Information Circular 11 – Iron and steel – Review of available methods of chemical analysis*

3 Terms and definitions

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

3.1
nominal diameter: d
value of the diameter, expressed in millimetres, by which the wire is designated and specified by the purchaser

NOTE This is the basis on which the values of all relevant characteristics are determined for the acceptance of the wire

3.2
actual diameter
arithmetic mean of two measurements of the diameter at right angles determined at any cross-section

3.3**out of roundness**

arithmetic difference between the maximum and minimum diameter measured in a transverse cross-section perpendicular to the wire axis

4 Classification

Hose wire is classified according to tensile strength. It is supplied in three classes of tensile strength:

- NT: Normal tensile strength;
- HT: High tensile strength;
- ST: Super tensile strength.

5 Designation and ordering**5.1 Designation**

For hose wire supplied in accordance with this document, the designation shall state in the following order:

- the term: hose wire;
- the coating: see **6.1.4**;
- the number of this document;
- the tensile strength class (see **4**) and the nominal tensile strength;
- the nominal diameter.

EXAMPLE Brass coated hose wire 0,30 mm high tensile strength 2750 MPa to 3050 MPa in accordance with EN 10324 shall be designated:

Hose wire brass coated EN 10324 HT 2750 MPa to 3050 MPa 0,30.

5.2 Information to be supplied by the purchaser and items to be agreed

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

- the required nominal diameter;
- the desired quantity;
- the unit and type of package (for recommended types of spools see **A.1**);
- if a coating other than brass is required (see **6.1.4**);
- the type of inspection document.

The following shall be agreed between the purchaser and the supplier at enquiry or order:

- specification of the coating if a coating other than brass is required (see **6.1.4**);

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- value of the circular cast if it is required to be less than 100 mm or more than 250 mm (see **6.5.3**);
- additional information to be included on the spool and unit package labels (see **8**).

EXAMPLE 20 t hose wire brass coated EN 10324 HT 2750 MPa to 3050 MPa 0,30 on spools of 30 kg doc EN 10204"3.1.B."

6 Requirements**6.1 Material****6.1.1 Steel**

The wire shall be manufactured from steel rod conforming to EN 10016-1 and EN 10016-2 for tensile strength NT and conforming to EN 10016-4 for tensile strengths HT and ST.

6.1.2 Chemical composition

The chemical composition according to the heat analysis shall conform to the limit values given in Table 1. The permissible deviation of the product analysis from the heat analysis shall be in accordance with EN 10016-2 and EN 10016-4.

Table 1 — Chemical composition (% by mass)

Type	C	Si	Mn	P max.	S max.
NT	0,60 to 0,80	0,15 to 0,30	0,40 to 0,70	0,035	0,035
HT and ST	0,75 to 0,90	0,15 to 0,30	0,40 to 0,60	0,020	0,025

Unless otherwise agreed at the time of enquiry and order, the choice of a suitable physical or chemical method of analysis for the determination of the product analysis shall be at the discretion of the supplier.

In cases of dispute, the analysis shall be carried out by a laboratory approved by the two parties. The method of analysis to be applied shall be agreed upon, if possible, in accordance with CR 10261.

6.1.3 Wire

The wire shall be patented and cold drawn in order to provide the required mechanical properties.

6.1.4 Coating material

If not otherwise stipulated by the purchaser at the time of enquiry or order (see **5.2**), the coating material shall be brass with a chemical composition of Cu: (67 ± 5) % and the remainder zinc.

In the case of other coatings, the specification shall be agreed between the purchaser and supplier at the time of enquiry or order (see **5.2**).

6.2 Mechanical properties

6.2.1 Tensile strength and elongation

When tested in accordance with 7.2.1 before and after the braiding operation the wire shall conform to the tensile strength values and have an elongation at rupture as specified in Table 2.

6.2.2 Reverse bend test

When tested in accordance with 7.2.2 the wire shall withstand the minimum number of bends specified in Table 2 without rupture.

6.2.3 Torsion test

When tested in accordance with 7.2.2 the wire shall withstand the minimum number of torsions specified in Table 2 without fracture.

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