SLOVENSKI STANDARD
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SIST EN 12385-3:2004+A1:2008

Jeklene žične vrvi - Varnost - 3. del: Podatki za uporabo in vzdrževanje

Steel wire ropes - Safety - Part 3: Information for use and maintenance

Drahtseile aus Stahldraht - Sicherheit - Teil 3: Informationen für Gebrauch und Instandhaltung

Câbles en acier - Sécurité - Partie 3: Informations pour l'utilisation et la maintenance

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English Version

Steel wire ropes - Safety - Part 3: Information for use and maintenance

Câbles en acier - Sécurité - Partie 3 : Informations pour l'utilisation et la maintenance

Drahtseile aus Stahldraht - Sicherheit - Teil 3: Informationen für Gebrauch und Instandhaltung

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 12385-3:2020) has been prepared by Technical Committee CEN/TC 168 “Chains, ropes, webbing, slings and accessories - Safety”, 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of an identical text or by endorsement, at the latest by June 2021, and conflicting national standards shall be withdrawn at the latest by June 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12385-3:2004+A1:2008.

EN 12385-3:2020 incorporates editorial changes required as part of the compliance with the Lift Directive 2014/33/EU.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA and Annex ZB, which are integral parts of this document.

The other Parts of this European standard are:

— Part 1: General requirements;

— Part 2: Definitions, designation and classification;

— Part 4: Stranded ropes for general lifting applications;

— Part 5: Stranded ropes for lifts;

— Part 6: Stranded ropes for mine shafts;

— Part 7: Locked coil ropes for mine shafts;

— Part 8: Stranded hauling and carrying-hauling ropes for cableway installations designed to carry persons;

— Part 9: Locked coil carrying ropes for cableway installations designed to carry persons;

— Part 10: Spiral ropes for general structural applications.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type C standard as stated in EN ISO 12100.

This Part of this European standard has been prepared to support the other Parts of this standard that concern themselves with the particular requirements for steel wire ropes to be used in specific applications.

The types of ropes concerned and the extent to which hazards are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A and B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for information for use and maintenance according to the provisions of this type C standard.

1 Scope

This document specifies the type of information for use and maintenance of steel wire ropes to be provided by the rope manufacturer or to be included in the manufacturer's handbook that accompanies a machine, piece of equipment or installation of which the steel wire rope forms a part.

The particular hazards covered by this document are identified in Clause 4.

For steel wire ropes conforming to Parts 8 and 9 used on cableway installations designed to carry persons, additional information for use and maintenance is given in EN 12927.

For steel wire rope slings, specific information on use and maintenance is given in EN 13414-2.

This document is not applicable to steel wire ropes manufactured before the date of publication of this document by CEN.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12385-2:2002+A1:2008, *Steel wire ropes — Safety — Part 2: Definitions, designation and classification*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and EN 12385-2:2002+A1:2008 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
inspection
routine visual check on the condition of the rope to identify obvious damage or deterioration which might affect its fitness for use

Note 1 to entry: Often performed on a daily basis before initial utilization of machine.

3.2
thorough examination
detailed external (and where possible, internal) examination of the rope carried out by a competent (trained and experienced) person at specific periodic time intervals as determined by national regulations

Note 1 to entry: Visual examination supplemented by other means, such as measurement or electro-magnetic non-destructive testing.

4 List of significant hazards

Table 1 contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment and which require action to eliminate or reduce the risk.

Table 1 — Hazards and associated requirements

Hazards relevant to this standard identified by reference to EN ISO 12100:2010	**Relevant clause of this standard**
Inadequate information for use and maintenance	5.2 Annex A
Inadequate information on rope selection	5.3 Annex B
Inadequate information about the effects on health and safety of the materials used in wire ropes	5.4 Annex C

5 Safety instructions and information for use and maintenance

5.1 General

Information shall be provided on the subjects listed in 5.2 to 5.4.

5.2 Use and maintenance

This information shall include temperature limits, use in exceptionally hazardous conditions, first use, handling and installation and maintenance.

An example of such information is given in Annex A.

5.3 Rope selection

For stranded ropes this information shall include guidance on rope construction in relation to abrasion and wear, type of core in relation to crushing of the rope at the drum, wire finish in relation to corrosion, direction of lay and type in relation to direction of coiling, rotational characteristics in relation to use of a swivel and fleet angle effects.

An example of such information is given in Annex B.

5.4 Material health and safety information on steel wire rope and its component parts

This information shall include details of all the individual materials that form part of the finished rope and general information relating to occupational protective measures, emergency medical procedures, safety (including any fire or explosion hazards) and disposal.

An example of such information is given in Annex C.

Annex A
(informative)

Example of general information for use and maintenance

A.1 Limitations on use due to adverse environmental conditions

A.1.1 Temperature

A.1.1.1 Steel wire ropes made from carbon steel wires

Account should be taken of the maximum temperature that may be reached by the wire rope in service. An underestimation of the temperature involved can lead to a dangerous situation.

Stranded ropes with fibre cores or fibre centres can be used up to a maximum of 100 °C.

Stranded ropes with steel cores and spiral ropes (i.e. spiral strand and locked coil) can be used up to 200 °C although some de-rating of the working load limit is necessary, the amount being dependent upon the exposure time at high temperature and the diameter of the wires. For operating temperatures between 100 °C and 200 °C the loss in strength may be assumed to be 10 %.

For temperatures above 200 °C special lubricants may be necessary and greater losses in strength than stated above will need to be taken into account. The rope or machinery manufacturer should be contacted.

The strength of steel wire ropes will not be adversely affected by operating temperatures as low as –40 °C and no reduction from the working load limit is necessary; however, rope performance may be reduced, depending upon the effectiveness of the rope lubricant at low temperatures.

When the rope is fitted with a termination, also refer to A.1.1.2.

A.1.1.2 Terminations

In addition to the limits stated above for rope, and unless otherwise specified by the rope manufacturer or the manufacturer of the machine, equipment or installation, the following operating temperatures shall not be exceeded:

— turn-back eye with aluminium ferrule: 150 °C;

— ferrule-secured eye with steel ferrule: 200 °C;

— socket filled with a lead-based alloy: 80 °C;

— socket filled with zinc or a zinc-based alloy: 120 °C;

— socket filled with resin – refer to resin socketing system designer's instructions.

A.1.2 Use in exceptionally hazardous conditions

In cases where exceptionally hazardous conditions are known to exist, e.g. offshore activities, the lifting of persons and potentially dangerous loads such as molten metals, corrosive materials or radioactive materials a risk assessment should be carried out and the working load limit selected or adjusted accordingly.

A.2 Before putting the rope into first use

A.2.1 Inspecting the rope and documents

The rope should be unwrapped and examined immediately after delivery in order to check its identity and condition and to ensure that the rope and its termination(s), if any, are compatible with the machinery or equipment to which they are to be attached in service.

If damage to the rope or its package is observed, this should be recorded on the delivery note.

The Certificate of conformity by the rope manufacturer should be kept in a safe place, e.g. with the crane handbook, for identification of the rope when carrying out periodic thorough examinations in service.

The rope should not be used for lifting purposes without the user having a Certificate in his possession.

A.2.2 Storing the rope

A clean, well-ventilated, dry, dust free, undercover location should be selected. The rope should be covered with waterproof material if it cannot be stored inside.

The rope should be stored and protected in such a manner that it will not be exposed to any accidental damage during the storage period or when placing the rope in, or taking it out of, storage.

The rope should be stored where it is not likely to be affected by chemical fumes, steam or any other corrosive agents.

If supplied on a reel, the reel should be rotated periodically during long periods of storage, particularly in warm environments, to prevent migration of the lubricant from the rope.

The rope should not be stored in areas subject to elevated temperatures as this may affect its future performance. In extreme cases its original as-manufactured breaking force could be severely reduced rendering it unfit for safe use.

The rope should not be allowed to make any direct contact with the floor and the reel should be so positioned that there is a flow of air under the reel.

NOTE Failure to ensure the above can result in the rope becoming contaminated with foreign matter and start the onset of corrosion even before the rope is put into service.

Preferably, the reel should be supported in an A-frame or cradle standing on ground which is capable of safely supporting the total mass of rope and reel.

The rope should be inspected periodically and, when necessary, a suitable rope dressing, which is compatible with the manufacturing lubricant, should be applied.

Any wet packaging, e.g. sackcloth, should be removed.

The rope marking should be checked to verify that it is legible and relates to the certificate. When removing from store, the principle 'first in, first out' should be applied.

A.2.3 Checking the condition of rope related parts of the machine, equipment or installation

Before installing the new rope, the condition and dimensions of rope related parts, e.g. drums, sheaves and rope guards, should be checked to verify that they are within the operating limits as specified by the original equipment manufacturer.

For ropes working on cranes, the effective groove diameter should be at least 5 % above the nominal rope diameter. The groove diameter should be checked using a sheave gauge.

Sheaves should also be checked to ensure that they are free to rotate.