SLOVENSKI STANDARD
SIST EN 13411-2:2001+A1:2008

01-december-2008

Zaključki jeklenih žičnih vrvi - Varnost - 2. del: Spletanje zank na vrvnih obesah

Terminations for steel wire ropes - Safety - Part 2: Splicing of eyes for wire rope slings

Endverbindungen für Stahldrahtseile - Sicherheit - Teil 2: Spleißen von Seilschlaufen für Anschlagseile

Terminaisons pour câbles en acier - Sécurité - Partie 2: Épissures de boucles pour élingues en câbles d'acier

Ta slovenski standard je istoveten z: EN 13411-2:2001+A1:2008

ICS:

53.020.30	Pribor za dvigalno opremo	Accessories for lifting equipment
77.140.99	Drugi železni in jekleni izdelki	Other iron and steel products

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EUROPEAN STANDARD

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Terminations for steel wire ropes - Safety - Part 2: Splicing of eyes for wire rope slings

Terminaisons pour câbles en acier - Sécurité - Partie 2: Epissures de boucles pour élingues en câble d'acier

Endverbindungen für Stahldrahtseile - Sicherheit - Teil 2: Spleißen von Seilschlaufen für Anschlagseile

This European Standard was approved by CEN on 20 April 2001 and includes Amendment 1 approved by CEN on 18 September 2008.

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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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 13411-2:2001+A1:2008) 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document supersedes EN 13411-2:2001.

This document includes Amendment 1, approved by CEN on 2008-09-18.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟨A1⟩ ⟨A1⟩.

This European Standard 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).

⟨A1⟩ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A1⟩

The other Parts of this European Standard are:

Part 1: Thimbles for steel wire rope slings
Part 3: Ferrules and ferrule-securing
Part 4: Metal and resin socketing
Part 5: U-bolt wire rope gripped termination
Part 6: Asymmetric wedge socket
Part 7: Symmetric wedge socket

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, 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 United Kingdom.

Introduction

This European Standard has been prepared to provide a means of conforming with the essential safety requirements of the Machinery Directive and associated EFTA Regulations.

The method of splicing described in the standard is based on historical experience and will produce a termination having an efficiency of at least 80%.

Purchasers ordering to this standard are advised to specify in their purchasing contract that the supplier operates a certified quality assurance system applicable to the relevant Part of this standard (eg EN ISO 9001) to ensure themselves that products claiming to comply consistently achieve the required level of quality.

While producing this standard it was assumed that negotiation occurs between the manufacturer and the user to decide whether a spliced eye is required.

1 Scope

This standard specifies minimum requirements for the splicing of eye terminations for six or eight strand steel wire ropes of up to 60 mm diameter complying with prEN 12385-4 used for slings to ensure that the spliced eye is strong enough to withstand a force of at least 80 % of the minimum breaking load of the rope.

Other hazards covered by this standard are identified in clause 4. Resistance to fatigue loading is not considered to be a significant hazard for slings and is not covered by this standard.

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 292-2:1991+A1:1995, *Safety of machinery - Basic concepts - General principles of design - Part 2: Technical principles and specifications (Amendment 1: 1995)*

EN 1050:1996, *Safety of machinery - Principles for risk assessment acceptance*

prEN 12385-2, *Steel wire ropes – Safety - Part 2: Classification, designation and definitions*

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in prEN 12385-2 apply together with those given below.

3.1
spliced eye termination (hand-spliced)
loop or eye at the end of a rope made by tucking the ends of the strands back into the main body of the rope

3.2
load carrying tuck
single reeving of a strand that comes out of the rope, is passed over a strand, then passed under a strand or strands, and finally comes out of the rope

NOTE This definition excludes the start which is not considered to be load carrying.

3.3
splicer
person carrying out the splicing

3.4
competent person
designated person, suitably trained qualified by knowledge and practical experience, and with the necessary instruction to ensure that the required operations are correctly carried out

4 Hazards

This clause contains the hazards and hazardous situations, as far as they are dealt with in this European standard, identified by risk assessment significant for this type of machinery and which requires action to eliminate or reduce risk.

Accidental release of a load, or release of a load due to failure of the spliced eye terminations of a sling puts at risk, either directly or indirectly, the safety or health of those persons within the danger zone. The requirements of this standard ensure on the basis of historical experience that the breaking force of the splice will not be less than 80% of that of the rope.

Table 1 contains those hazards that require action to reduce risk identified by risk assessment as being specific and significant for spliced eye terminations.

Table 1 — Hazards and associated requirements

Hazards identified in annex A of EN 1050: 1996		Relevant clause of annex A of EN 292-2: 1991+A1: 1995	Relevant clause/ subclause of this standard
1.7	Puncture hazard	1.3	5

5 Splicing operation

5.1 General

Splicing shall be carried out by a splicer. The splicer shall be trained in splicing.

5.2 Number of tucks required

For each strand, the splice shall have five series of load carrying tucks. At least three of the load carrying tucks shall be made with the whole strand, the remainder shall be made with strands comprising at least 50% of the wires.

5.3 Direction of the load carrying tucks

Load carrying tucks shall be made against the lay of the rope.

5.4 Ropes with a steel wire rope core

Where the rope has a steel wire rope core, the core shall be unlaid at the end of the loop where splicing starts and be spliced with the outer strands for three tucks. The tail ends of the strand from the core shall not protrude from the splice.

5.5 Protruding wires

Any protruding wires must be addressed; for example by serving, reinsertion of the tails back into the rope, or by covering with heat shrink wrapping. Where used, serving or wrapping shall not cover the three full strand load carrying tucks.

6 Verification of the safety requirements

6.1 Qualification of personnel

Any person verifying the splice shall be a competent person.

6.2 Number of tucks

The requirements of 5.2 shall be confirmed by visual inspection.

6.3 Direction of the tucks

The direction of the tucks shall be confirmed by visual inspection.

6.4 Ropes with a steel wire rope core

The splice shall be visually inspected to ensure that the tails of the core do not protrude outside of the rope.

6.5 Protruding wires

The splice shall be visually inspected to ensure that the tails of the tucks do not protrude outside of the rope.

Annex ZA
(informative)

A1 Relationship between this European standard and the Essential Requirements of EU Directive 98/37/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 98/37/EC amended by 98/79/CE on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

WARNING - Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard. A1