

## **Terastraadist trosside otsmuhvid. Ohutus. Osa 4: Metall- ja polümeerliitmikud**

Terminations for steel wire ropes - Safety - Part 4: Metal and resin socketing

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13411-4:2011 sisaldab Euroopa standardi EN 13411-4:2011 ingliskeelset teksti.

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English Version

## Terminations for steel wire ropes - Safety - Part 4: Metal and resin socketing

Terminaisons pour câbles en acier - Sécurité - Partie 4:  
Manchonnage à l'aide de métal et de résine

Endverbindungen für Drahtseile aus Stahldraht - Sicherheit  
- Teil 4: Vergießen mit Metall und Kunstharz

This European Standard was approved by CEN on 19 February 2011.

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## Foreword

This document (EN 13411-4:2011) 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of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

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

This document supersedes EN 13411-4:2002+A1:2008.

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, which is an integral part of this document.

This second edition incorporates both technical and editorial amendments, with the following main changes made with respect to the previous edition:

- enhance approved socket dimension criteria negating need for type testing and move data into informative Annex F;
- add definition for ‘socketing manufacturer’;
- re-draft hazards clause;
- re-draft standard in accordance with rules of ISO/IEC Directives, Part 2 and CEN Guide 414.

EN 13411, under the general title “Terminations for steel wire ropes — Safety”, consists of the following parts:

- Part 1: Thimbles for steel wire rope slings;
- Part 2: Splicing of eyes for wire rope slings;
- Part 3: Ferrules and ferrule-securing;
- Part 4: Metal and resin socketing;
- Part 5: U-bolt wire rope grips;
- Part 6: Asymmetric wedge socket;
- Part 7: Symmetric wedge socket;
- Part 8: Swage terminals and swaging.

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, Croatia, 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 the United Kingdom.

## Introduction

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

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this standard.

When provisions of this type C standard are different from those which are stated in type B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

The methods of socketing described in this standard are based on established procedures and following them is considered to result in a rope termination having an efficiency of 100 % based on the minimum breaking force of the rope.

It is assumed that the socket is:

- suitable for heating without changing the characteristics of the socket material when the socketing medium is molten metal;
- strong enough for the rope; and
- suitable for the purpose for which it is intended.

## 1 Scope

This European Standard specifies the minimum requirements for the molten metal and resin socketing of steel wire ropes within the scopes of EN 12385-4:2002+A1:2008; EN 12385-5:2002; EN 12385-6:2004; EN 12385-7:2002; EN 12385-8:2002; EN 12385-9:2002 and EN 12385-10:2003+A1:2008.

The European Standard is applicable only to those requirements that ensure that the socketing is strong enough to withstand a force of at least 100 % of the minimum breaking force of the rope (i.e. socket termination efficiency factor  $K_T = 1,0$ ).

**NOTE** Rope terminations made by socketing in accordance with this European Standard can be used for determining the breaking force of wire ropes in accordance with EN 12385-1:2002+A1:2008, Annex A.

Socketing by the methods and materials described in this standard are for use within the temperature limits given in normative Annex E.

This European Standard deals with all significant hazards, hazardous situations and events relevant to metal and resin socket terminations, when they are used as intended and under conditions of misuse which are reasonably foreseeable (see Clause 4).

## 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 59, *Glass reinforced plastics — Measurement of hardness by means of a Barcol impressor*

EN 1774:1997, *Zinc and zinc alloys — Alloys for foundry purposes — Ingot and liquid*

EN 12385-1:2002+A1:2008, *Steel wire ropes — Safety — Part 1: General requirements*

EN 12385-2:2002+A1:2008, *Steel wire ropes — Safety — Part 2: Definitions, designation and classification*

EN ISO 75-2:2004, *Plastics — Determination of temperature of deflection under load — Part 2: Plastics, ebonite and long-fibre-reinforced composites (ISO 75-2:2004)*

EN ISO 604, *Plastics — Determination of compressive properties (ISO 604:2002)*

EN ISO 3838, *Crude petroleum and liquid or solid petroleum products — Determination of density or relative density — Capillary-stoppered pycnometer and graduated bicapillary pycnometer methods (ISO 3838:2004)*

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

### 3.1

#### **socket**

type of wire rope termination incorporating a socket basket