



SLOVENSKI STANDARD
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01-januar-2009

Tekstilne obese - Varnost - 2. del: Obese z okroglim presekom iz umetnih vlaken za splošno uporabo

Textile slings - Safety - Part 2: Roundslings made of man-made fibres for general purpose use

Textile Anschlagmittel - Sicherheit - Teil 2: Rundschlingen aus Chemiefasern für allgemeine Verwendungszwecke

Elingues textiles - Sécurité - Partie 2: Elingues rondes en textiles chimiques d'usage courant

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ICS:

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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English Version

Textile slings - Safety - Part 2: Roundslings made of man-made fibres for general purpose use

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This European Standard was approved by CEN on 30 June 2000 and includes Corrigendum 1 issued by CEN on 7 June 2006 and Amendment 1 approved by CEN on 11 September 2008.

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


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Foreword

This document (EN 1492-2:2000+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of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document supersedes EN 1492-2:2000.

This document includes Amendment 1, approved by CEN on 2008-09-11 and Corrigendum 1 issued by CEN on 2006-06-07.

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

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags **AC** **AC**.

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**

This European Standard is one of a series of standards related to safety for textile slings as listed below:

Part 1: Specification for flat woven webbing slings, made of man-made fibres, for general purpose use

Part 2: Specification for roundslings, made of man-made fibres, for general purpose use

Part 4: Specification for lifting slings for general service made from natural and man-made fibre rope

In this Standard:

Annex A is normative, and gives the test methods to be used to verify the safety requirements.

Annex B is normative, and gives the requirements for information on use and maintenance to be provided by the manufacturer with roundslings conforming to this European Standard.

Annex C is informative, and provides some detailed information for use and maintenance which may be appropriate in compiling the information in accordance with annex B.

A1 Annexes ZA and ZB are informative and give **A1** the relationship with EU Directives.

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.

EN 1492-2:2000+A1:2008 (E)**Introduction**

This European Standard has been prepared to be a harmonized standard providing one means of complying with the essential safety requirements of the Machinery Directive and associated EFTA regulations.

This European Standard is a type C standard as specified in EN 292. The lifting accessories concerned and the extent to which hazards are covered is indicated in the scope of this standard.

NOTE For hazards that are not covered by this standard, lifting accessories should be in accordance with EN 292.

1 Scope

This European Standard specifies the requirements related to safety, including methods of rating and testing roundslings up to 40 tonnes working load limit (in straight lift) and two-, three-, and four-leg roundslings assemblies, with or without fittings, made of polyamide, polyester and polypropylene.

The roundslings covered by this Part of EN 1492 are intended for general purpose lifting operations, i.e. when used for lifting objects, materials or goods which require no deviations from the requirements, safety factors or WLL's specified. Lifting operations not covered by this standard include the lifting of persons, potentially dangerous materials such as molten metal and acids, glass sheets, fissile materials, nuclear reactors and where special conditions apply.

Roundslings conforming to this European Standard are suitable for use and storage in the following temperature ranges:

- [SIST EN 1492-2:2001+A1:2009](https://standards.iteh.ai/catalog/standards/sist/f7201b12-2c92-4c53-8688-e157e26e9cfd/sist-en-1492-2-2001a1-2009)
- polyester and polyamide: -40°C to 100°C,
 - polypropylene: -40°C to 80°C

This European Standard does not apply to the types of roundslings indicated below:

- roundslings designed for securing or lashing of cargoes to each other on pallets and platforms or in vehicles;
- slings of tubular webbing without filling.

This European Standard deals with the technical requirements to minimize the hazards listed in clause 4 which can arise during the use of roundslings when carried out in accordance with the instructions and specifications given by the manufacturer or authorized representative.

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/A11995, Safety of machinery - Basic concepts, general principles for design – Part 2: Technical principles and specifications

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

prEN 1677-1:2000, Components for slings – Safety - Part 1: Forged steel components, Grade 8

prEN 1677-2:2000, Components for slings – Safety - Part 2: Forged steel lifting hooks with latch, Grade 8

prEN 1677-3:1998, Components for slings – Safety - Part 3: Forged steel self-locking hooks, Grade 8

prEN 1677-4:1998, Components for slings – Safety - Part 4: Links, Grade 8

prEN 1677-5:1998, Components for slings – Safety - Part 5: Forged steel lifting hooks with latch, Grade 4

prEN 1677-6:1998, Components for slings – Safety - Part 6: Links, Grade 4

EN 10002-2:1991, Metallic materials - Tensile testing - Part 2: Verification of the force measuring system of the tensile testing machines

EN 45012, General requirements for bodies operating assessment and certification/registration of quality systems (ISO/IEC Guide 62:1996)

EN ISO 9002:1994, Quality systems - Model for quality assurance in production, installation and servicing (ISO 9002:1994)

3 Terms and definitions

For the purposes of this standard, the following terms and definitions, symbols and abbreviations apply.

3.1

roundsling

endless flexible sling consisting of a loadbearing core of yarn completely enclosed in a woven cover, with or without fittings.

3.2

multi-leg sling assembly

roundsling assembly, consisting of two, three or four identical roundslings attached to a master link (See table 2)

3.3

representative sling

roundsling representative of roundslings of the same type, which is used for verification purposes (See 6.2 and 6.3)

NOTE This may differ from the production roundsling in length only

3.4

core

hank of yarn which comprises the loadbearing part of a roundsling.

3.5

cover

woven tubular webbing, or tube made from woven fabric and joined along its length, and which encloses the core.

3.6

closed surface

webbing surface (of cover) which, when visually and manually examined, appears closed, as is the case following thermofixing or colouring with additional substances, and where the single fibres support each other.

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3.7 fitting
loadbearing metal component, supplied as part of a roundsling so as to allow it to be attached to other lifting accessories, connected to other roundslings to form a multi-leg sling assembly or connected to the hook of a crane or other lifting machine.

3.8 master link
link, or link assembly, forming the upper terminal fitting of a multi-leg sling assembly by means of which the sling assembly is attached to the hook of a crane, other lifting machine or lifting accessory.

3.9 nominal length
specified length of the roundsling, inclusive of fittings, from bearing point to bearing point (See 5.5)

3.10 effective working length (EWL)
actual finished length of the roundsling, inclusive of fittings, from bearing point to bearing point (See 5.5)

3.11 working load limit (WLL)
maximum mass which a roundsling is designed to sustain in straight lift and which a sling or sling assembly is authorized to sustain in general lifting service (See table 2)

3.12 mode factor (M)
factor applied to the WLL of a roundsling in order to arrive at the WLL of the roundsling or sling assembly for a given mode of assembly or use.

3.13 competent person
designated person, suitably trained and qualified by knowledge and practical experience, and with the necessary instructions to enable the required tests and examination to be carried out.
NOTE 4.18 of EN ISO 9002:1994 gives guidance on training.

4 Hazards

The accidental release of a load, or release of a load due to failure of a component puts at risk, either directly or indirectly, the safety or health of those persons within the danger zone. In order to provide the necessary strength and durability of lifting accessories this Part of EN 1492 specifies requirements for the design, manufacture and testing to ensure the specified levels of performance are met.

Endurance has not been identified as a hazard when roundslings having the specified levels of performance given in this Part of EN 1492 are used in general lifting service.

Since failure can be caused by the incorrect choice of WLL and specification of lifting accessory this Part of EN 1492 also gives the requirements for marking and the manufacturer's certificate.

Aspects of safe use associated with good practice are given in annex B (normative) and annex C (informative).

Table 1 lists those hazards in as far as they are dealt with in this standard that require action to reduce those risks identified by risk assessment as being specific and significant for roundslings made of polyamide, polyester and polypropylene.

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/sub-clause of this Part of EN 1492
1.e)	Mechanical hazard due to inadequacy of strength	1.3.2	5
		4.1.2.3	5
		4.1.2.5	5
		4.2.4	6
		1.7.3	7
		4.3.2	7
		4.2.4	8
15	Errors of fitting hazard	1.5.4	5
17	Falling or ejected objects hazard	1.3.3	Annex B
26	Insufficient instructions for the driver/operator	1.7.4	9, annex B
		4.4.1	9, annex B
27.1.5	Inadequate holding devices/accessories hazard	4.4.1	5.9
27.6	Inadequate selection of lifting accessories hazard	4.1.2.5	5.9
		4.3.2	7

5 Safety Requirements

5.1 Materials

The roundsling shall be produced wholly from industrial yarns certified by the manufacturer as being fast to light and heat-stabilized with a tenacity of not less than 60 cN/tex, from one of the following materials:

- polyamide (PA), high tenacity multifilament;
- polyester (PES), high tenacity multifilament;
- polypropylene (PP), high tenacity multifilament.

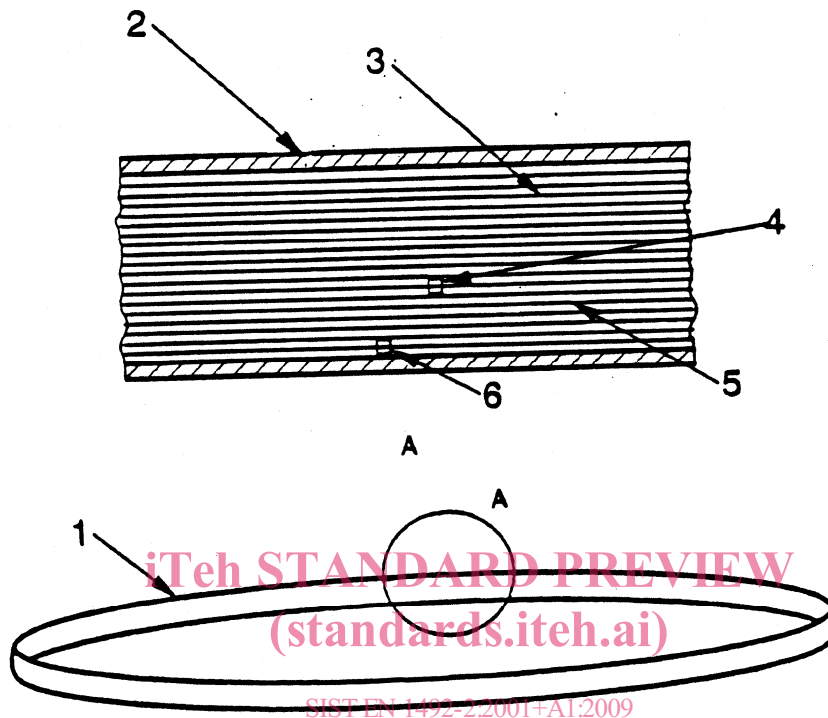
NOTE The definitions for these are given in ISO 2076. The content of the constituent materials may be determined in accordance with ISO 1833.

NOTE Attention is drawn to the different resistance of man-made fibres to chemicals, which are summarized in annex C.

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5.2 Core

The core shall be formed from one or more yarns of identical parent material (see 5.1) wound together with a minimum of 11 turns, and joined to form an endless hank. It shall be uniformly wound to ensure even distribution of the load. Any additional joins in the yarns shall be separated by at least four turns of the yarn and shall be compensated for by an extra turn per join (See figure 1).



- 1) Roundsling
- 2) Cover
- 3) Core yarns
- 4) Additional join
- 5) Minimum of four turns of yarn
- 6) Join forming endless hank

<https://standards.iteh.ai/catalog/standards/sist/f7201b12-2c92-4c53-8688-e157e26e9cfd/sist-en-1492-2-2001a1-2009>

Figure 1 — Principle of core construction

5.3 Cover

The cover shall be of webbing woven from identical parent material (see 5.1) as the core, and made with the ends overlapped and sewn. The edges of the woven cover material shall be finished in such a way that they cannot unravel. If the cover is welded, care shall be taken to ensure that the welding does not affect the core. The woven material of the cover shall be treated to produce a closed surface.

NOTE These treatments inhibit abrasion and the ingress of abrasive materials and may be applied to the woven material and/or the yarn.

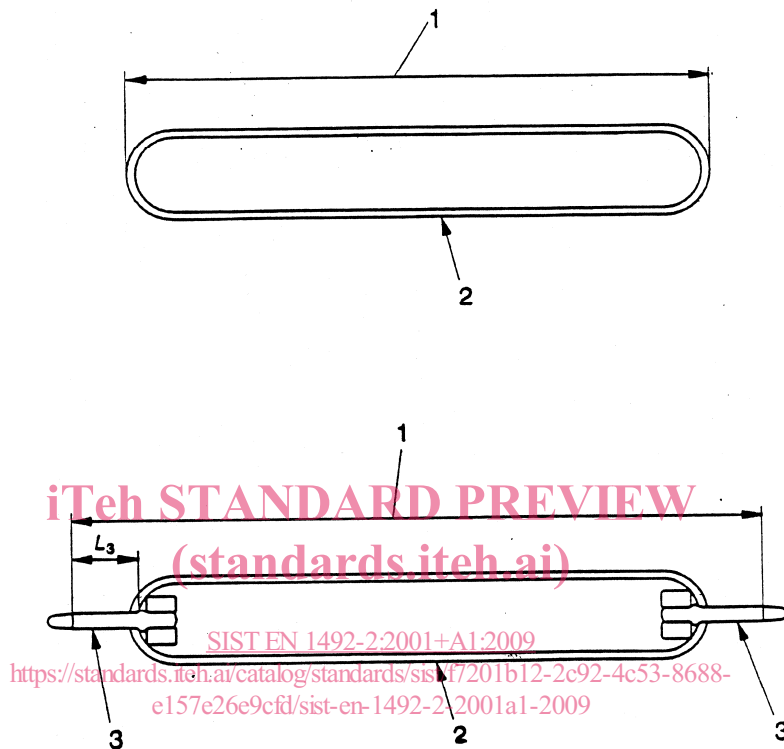
5.4 Sewing

The thread of all seams shall be made of identical parent material (see 5.1) as the cover and core, and the seam shall be made with a locking stitch machine.

NOTE The use of a different colour thread to that of the cover will facilitate inspection during the manufacturer's verification and in-service inspections by the user.

5.5 Effective working length (EWL)

The effective working length (EWL), l_1 , of a roundsling (see figure 2) shall not differ from the nominal length by more than 2 % of the nominal length, when laid flat and pulled taut by hand tension and measured with a steel tape or rule graduated in increments of 1 mm.



- 1) Effective working length (l_1)
- 2) Roundsling
- 3) Integral fitting

Figure 2 — Effective working length




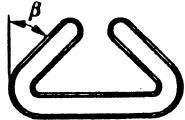
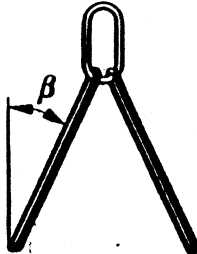
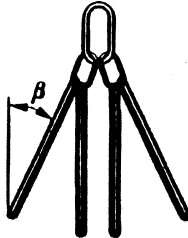
5.6 Colour coding

The colour of the cover shall be as given in table 2 to indicate the WLL of the roundsling in straight lift. Roundslings of any other nominal WLL's, not indicated in table 2, shall not be denoted with the colours indicated therein.

5.7 Working load limits

The WLL of a roundsling, or sling assembly, for a given mode of assembly or use shall be derived from the WLL of the roundsling in straight lift multiplied by the appropriate mode factor, M, in accordance with table 2.

Table 2 — Working load limits and colour codes

WLL of roundsling in straight lift	Colour of roundsling cover	Working load limits in tonnes								
		Straight lift	Choked lift	Basket hitch		Two leg sling		Three and four leg slings		
										
				Parallel	$\beta =$ 0 to 45°	$\beta =$ 45° to 60°	$\beta =$ 0 to 45°	$\beta =$ 45° to 60°	$\beta =$ 0 to 45°	$\beta =$ 45° to 60°
		M = 1	M = 0,8	M = 2	M = 1,4	M = 1	M = 1,4	M = 1	M = 2,1	M = 1,5
1,0	Violet	1,0	0,8	2,0	1,4	1,0	1,4	1,0	2,1	1,5
2,0	Green	2,0	1,6	4,0	2,8	2,0	2,8	2,0	4,2	3,0
3,0	Yellow	3,0	2,4	6,0	4,2	3,0	4,2	3,0	6,3	4,5
4,0	Grey	4,0	3,2	8,0	5,6	4,0	5,6	4,0	8,4	6,0
5,0	Red	5,0	4,0	10,0	7,0	5,0	7,0	5,0	10,5	7,5
6,0	Brown	6,0	4,8	12,0	8,4	6,0	8,4	6,0	12,6	9,0
8,0	Blue	8,0	6,4	16,0	11,2	8,0	11,2	8,0	16,8	12,0
10,0	Orange	10,0	8,0	20,0	14,0	10,0	14,0	10,0	21	15,0
Over 10,0	Orange									

M = Mode factor for symmetrical loading. Handling tolerance for slings or parts of slings indicated as vertical = 6°