



**SLOVENSKI STANDARD**  
**SIST EN 818-4:1999+A1:2008**  
**01-julij-2008**

---

Short link chain for lifting purposes - Safety - Part 4: Chain slings - Grade 8

Kurzgliedrige Rundstahlketten für Hebezwecke - Sicherheit - Teil 4: Anschlagketten - Güteklasse 8

Chaînes de levage à maillons courts - Sécurité - Partie 4: Elingues en chaînes - Classe 8

**iTeh STANDARD PREVIEW**

(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 818-4:1996+A1:2008**

<https://standards.iteh.ai/catalog/standards/sist/e4b2d6e9-0146-4208-8c01-65639a616f82/sist-en-818-4-1999a1-2008>

---

**ICS:**

53.020.30      Pribor za dvigalno opremo      Accessories for lifting equipment

**SIST EN 818-4:1999+A1:2008**      en,fr

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 818-4:1999+A1:2008

<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8e61-65639a616f82/sist-en-818-4-1999a1-2008>

English Version

**Short link chain for lifting purposes - Safety - Part 4: Chain slings  
- Grade 8**

Chaînes de levage à maillons courts - Sécurité - Partie 4:  
Elingues en chaînes - Classe 8

Kurzgliedrige Rundstahlketten für Hebezwecke - Sicherheit  
- Teil 4: Anschlagketten - Güteklasse 8

This European Standard was approved by CEN on 7 March 1996 and includes Amendment 1 approved by CEN on 10 February 2008.

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

CEN members are the national standards bodies of 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.

**iTeh STANDARD PREVIEW**  
(standardsite.com)  
<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8e61-65639a616f82/sist-en-818-4-1999a1-2008>



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

Contents

Page

Foreword.....	4
Introduction .....	5
1 Scope .....	6
2 Normative references .....	6
3 <b>[A1]</b> Terms and definitions <b>[A1]</b> .....	7
4 Hazards .....	8
5 Safety requirements .....	9
5.1 Components of a chain sling.....	9
5.1.1 Chain .....	9
5.1.2 Forged steel components .....	9
5.1.3 Links.....	9
5.1.4 Hooks .....	9
5.2 Design and construction.....	10
5.2.1 <b>[A1]</b> Chain slings <b>[A1]</b> assembled with mechanical joining devices .....	10
5.2.2 <b>[A1]</b> Chain <b>[A1]</b> slings assembled by welding .....	10
5.2.3 Endless <b>[A1]</b> chain <b>[A1]</b> slings.....	10
5.2.4 Tolerance on length.....	10
5.3 Working load rating .....	11
5.3.1 Single-leg <b>[A1]</b> chain <b>[A1]</b> slings .....	11
5.3.2 Multi-leg <b>[A1]</b> chain <b>[A1]</b> slings.....	11
5.3.3 Endless <b>[A1]</b> chain <b>[A1]</b> slings.....	11
6 Verification of safety requirements.....	12
6.1 <b>[A1]</b> Qualification of personnel.....	12
6.2 Manufacturing proof force .....	13
6.2.1 General.....	13
6.2.2 Manufacturing proof force factors .....	13
6.2.3 Post-test examination .....	13
6.3 Final examination.....	13
6.3.1 <b>[A1]</b> Chain <b>[A1]</b> slings joined by mechanical devices .....	13
6.3.2 <b>[A1]</b> Chain <b>[A1]</b> slings of welded construction .....	13
7 Marking .....	14
7.1 General.....	14
7.2 Single-leg <b>[A1]</b> chain <b>[A1]</b> slings.....	14
7.3 Multi-leg <b>[A1]</b> chain <b>[A1]</b> slings rated for a range of angles from 0° to 45° to the vertical.....	14
8 Manufacturer's certificate .....	15
8.1 General.....	15
8.2 <b>[A1]</b> Chain <b>[A1]</b> slings of welded construction .....	15
8.3 <b>[A1]</b> Chain <b>[A1]</b> slings joined by mechanical devices .....	15
9 <b>[A1]</b> Information <b>[A1]</b> for use .....	16
Annex A (normative) Alternative method of rating and marking a chain sling for a specific lifting application .....	21
A.1 General.....	21
A.2 Alternative method of rating.....	21
A.3 Manufacturing proof force .....	21
A.4 Marking of <b>[A1]</b> chain <b>[A1]</b> slings rated by the alternative method of rating.....	22
Annex B (informative) <b>[A1]</b> Bases for calculation of values for the working load limits <b>[A1]</b> .....	23

<b>B.1</b>	<b>Calculated values of working load limits (WLL) for single-leg <span style="border: 1px solid black; padding: 0 2px;">A1</span> chain <span style="border: 1px solid black; padding: 0 2px;">A1</span> slings</b> .....	<b>23</b>
<b>B.2</b>	<b>Calculated values of working load limits (WLL) for multi-leg <span style="border: 1px solid black; padding: 0 2px;">A1</span> chain <span style="border: 1px solid black; padding: 0 2px;">A1</span> slings</b> .....	<b>23</b>
<b>Annex C</b>	<b>(informative) Designation system for chain slings - Grade 8</b> .....	<b>24</b>
<b>Annex D</b>	<b>(<span style="border: 1px solid black; padding: 0 2px;">A1</span>) normative (<span style="border: 1px solid black; padding: 0 2px;">A1</span>) Identification tags for chain slings</b> .....	<b>25</b>
<b>D.1</b>	<b>General</b> .....	<b>25</b>
<b>D.2</b>	<b>Tags for chain slings</b> .....	<b>25</b>
<b>Annex ZA</b>	<b>(informative) (<span style="border: 1px solid black; padding: 0 2px;">A1</span>) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC</b> .....	<b>27</b>
<b>Annex ZB</b>	<b>(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC</b> .....	<b>28</b>
<b><span style="border: 1px solid black; padding: 0 2px;">A1</span> Bibliography</b>	.....	<b>29</b>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 818-4:1999+A1:2008](https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8e61-65639a616f82/sist-en-818-4-1999a1-2008)  
<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8e61-65639a616f82/sist-en-818-4-1999a1-2008>

## Foreword

This document (EN 818-4:1996+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 October 2008 and conflicting national standards shall be withdrawn at the latest by October 2008.

This document includes Amendment 1, approved by CEN on 2008-02-10.

This document supersedes EN 814-4:1996.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\boxed{A_1}$ .

$\boxed{A_1}$  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 Annexes ZA and ZB, which are integral parts of this document.  $\boxed{A_1}$

The other parts of EN 818 are:

Part 1 : General conditions of acceptance

Part 2 : Medium tolerance chain for chain slings - Grade 8

Part 3 : Medium tolerance chain for chain slings - Grade 4

Part 5 : Chain slings - Grade 4

$\boxed{A_1}$  Part 6 : Chain slings – Specification for information for use and maintenance to be provided by the manufacturer  $\boxed{A_1}$

$\boxed{A_1}$  Part 7 : Fine tolerance hoist chain, Grade T (Types T, DAT and DT)  $\boxed{A_1}$

$\boxed{A_1}$  *deleted text*  $\boxed{A_1}$

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 be a harmonized standard to provide one means of conforming with the essential safety requirements of the Machinery Directive.

The Directive stipulates that where chain with welded links is used for lifting accessories it is to be of short line type and for the purposes of this standard this is chain having a ratio of nominal pitch to nominal size of 3:1.

The extent to which hazards are covered is indicated in the scope of this Part of EN 818. In addition, lifting equipment shall comply as appropriate with  $\text{A}_1$  EN ISO 12100  $\text{A}_1$  for hazards which are not covered by this standard.

Annex C gives a designation system for recording the identifying features of grade 8 chain slings. Since this system is not widely used it has been included in this first edition of this standard as an informative annex, however should its use become more generally accepted then the status of the information would need to be reviewed.

$\text{A}_1$  This standard is a Type C standard as stated in EN ISO 12100.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for equipment that have been designed and built according to the provisions of this type C standard.  $\text{A}_1$

**ITEH STANDARD PREVIEW**  
**(standards.iteh.ai)**  
SIST EN 818-4:1999+A1:2008  
<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8e61-65639a616f82/sist-en-818-4-1999a1-2008>

## 1 Scope

This European Standard specifies the requirements related to safety, methods of rating and testing of single-, two-, three-, four-leg and endless chain slings assembled by:

- a) mechanical joining devices;
- b) welding

using short link grade 8 medium tolerance lifting chain conforming to EN 818-2 together with the appropriate range of components of the same grade.

**A1** deleted text **A1**

The hazards covered by this European Standard are identified in clause 4.

Bases for the calculation of working load limits are given in annex B.

Annex C gives an example of a designation system for chain slings.

## 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.

[SIST EN 818-4:1999+A1:2008](https://standards.iteh.ai/catalog/standards/sist/en-818-4-1999a1-2008)

**A1** deleted text **A1**

<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-ef46-4208-8c61-65639a616f82/sist-en-818-4-1999a1-2008>

EN 818-1, *Short link chain for lifting purposes - Safety – Part 1: General conditions of acceptance*

EN 818-2, *Short link chain for lifting purposes - Safety – Part 2: Medium tolerance chain for chain slings - Grade 8*

**A1** EN 818-6:2000+A1 **A1**, *Short link chain for lifting purposes - Safety – Part 6: Chain slings - Instructions for use and maintenance*

**A1** EN 1050 **A1**, *Safety of machinery – Risk assessment*

**A1** EN 1677-1:2000+A1 **A1**, *Components for slings - Safety – Part 1: Forged steel components - Grade 8*

**A1** EN 1677-2:2000+A1 **A1**, *Components for slings - Safety – Part 2: Forged steel lifting hooks with latch - Grade 8*

**A1** EN 1677-4:2000+A1 **A1**, *Components for slings - Safety – Part 4: Links - Grade 8*

**A1** deleted text **A1**

**A1** EN ISO 12100-1, *Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2, *Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles (ISO 12100-2:2003)* **A1**



### 3 **Terms and definitions**

For the purposes of this document, the terms, definitions and symbols given in EN 818-1:1996+A1 and the following apply.

#### 3.1

##### **chain sling**

assembly consisting of a chain leg or chain legs joined to upper and lower terminals for attaching loads to the hook of a crane or other lifting machine

NOTE See Figures 1 to 4.

#### 3.2

##### **nominal size of chain sling**

The nominal size of short link chain, in millimetres, used in the manufacture of the chain sling.

#### 3.3

##### **nominal grade of chain sling**

For the purpose of designation in accordance with annex C, is the same as the grade of the short link chain used in the manufacture of the chain sling i.e. 8.

#### 3.4

##### **master link**

A link forming the upper terminal of a chain by means of which the chain sling is attached to the hook of a crane or other lifting machine. ~~deleted text~~

NOTE See Figures 1 to 4.

#### 3.5

##### **length of a leg**

For a finished chain sling, is the length from the lower bearing point of the lower terminal to the upper bearing point of the upper terminal. ~~deleted text~~

NOTE See Figures 1 to 4.

#### 3.6

##### **intermediate master link**

A link used to connect one or two legs of a sling to a master link.

#### 3.7

##### **lower terminal**

A link, hook or other device fitted at the end of a leg of a sling, remote from the master link or upper terminal.

#### 3.8

##### **mechanical joining device**

A means of connection which does not depend on welding. It may be integral with a component or be a separate component. ~~deleted text~~.

NOTE See Figure 5.

#### 3.9

##### **joining link**

A welded link fitted to the end of a chain to connect it either directly or through an intermediate link to an upper or lower terminal or intermediate master link or in the case of an endless chain sling to the other end of the chain. ~~deleted text~~.

NOTE See Figures 1 to 4.

**3.10  
intermediate link**

A welded link used to form a connection between the terminal and the joining link fitted to the chain ~~text~~.

NOTE See Figures 1 to 4.

**3.11  
manufacturing proof force (MPF) of a chain sling**

A force applied during manufacture as a test to the whole chain sling or a force applied as a test to a section of chain sling.

**3.12  
working load limit (WLL) of a chain sling:**

The maximum mass which a sling is authorized to sustain in general lifting service.

**3.13  
master link assembly**

assembly consisting of a master link together with two intermediate master links

**4 Hazards**

Accidental release of a load, or release of a load due to failure of lifting accessories such as slings or their component parts puts at risk either directly or indirectly the safety or health or health of those persons within the danger zone of lifting equipment.

In order to provide the necessary strength and durability of lifting accessories this Part of EN 818 lays down requirements for the design, selection of materials of construction and testing to ensure that specified levels of performance are met.

Fatigue failure has not been identified as a hazard when chain slings having the specified levels of performance given in this Part of EN 818 are used in general lifting service.

Since failure can be caused by the incorrect choice of grade and specification of lifting accessory this Part of EN 818 also gives the requirements for marking and the manufacturer's certificate.

Errors in fitting together of slings can also lead to premature failure and this Part of EN 818 contains dimensional requirements to allow correct fit.

Those aspects of safe use associated with good practice are given in EN 818-6:2000+A1.

Table 1 contains those hazards, which require action to reduce risk identified by risk assessment as being specific and significant for chain slings grade 8.

Table 1 — Hazards and associated requirements

Hazards identified in annex A of [A1] EN 1050 [A1]			Relevant clause/sub-clause of this Part of EN 818
[A1] 1 e) [A1]	Mechanical hazard due to inadequacy of strength		[A1] <i>deleted text</i> [A1]
15	Errors of fitting hazard		5.2

## 5 Safety requirements

### 5.1 Components of a chain sling

#### 5.1.1 Chain

The chain shall comply with EN 818-2.

[SIST EN 818-4:1999+A1:2008](https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-cf46-4208-8c61-65639a616f82/sist-en-818-4-1999a1-2008)

<https://standards.iteh.ai/catalog/standards/sist/e4b2dae9-cf46-4208-8c61-65639a616f82/sist-en-818-4-1999a1-2008>

#### 5.1.2 Forged steel components

Forged steel components, including mechanical joining devices, for use with grade 8 chain in the manufacture of chain slings shall comply with [A1] EN 1677-1:2000+A1 [A1].

#### 5.1.3 Links

Master links and intermediate master links shall comply with [A1] EN 1677-4:2000+A1 [A1].

Lower terminal links shall comply with [A1] EN 1677-4:2000+A1 [A1] except for those clauses relating to link dimensions.

Joining links and intermediate links shall comply with [A1] EN 1677-4:2000+A1 [A1] except for those clauses related to link dimensions.

Lower terminal links, joining links and intermediate links shall satisfy the appropriate requirements of 5.2.

#### 5.1.4 Hooks

Forged steel lifting hooks with latch shall comply with [A1] EN 1677-2:2000+A1 [A1].

Hooks not covered by these standards shall comply with the requirements of 5.1.2.

NOTE The details of forged steel self-locking hooks are contained in [A1] EN 1677-3:2001+A1 [A1], which is in the course of preparation.

## 5.2 Design and construction

### 5.2.1 $\square_{A1}$ Chain slings $\square_{A1}$ assembled with mechanical joining devices

5.2.1.1 The assembly of the  $\square_{A1}$  chain  $\square_{A1}$  sling shall be undertaken in accordance with the chain manufacturer's instructions.

5.2.1.2  $\square_{A1}$  Chain  $\square_{A1}$  slings shall be so designed and manufactured that when assembled in accordance with the manufacturer's instructions, the unintentional disconnection of any component part cannot occur.

5.2.1.3 Pear-shaped links shall only be used if they have an integral joining device.

5.2.1.4 Assembled mechanical joining devices shall have a working load limit not less than that of the chain(s) to which they are connected in a chain sling.

5.2.1.5 The component parts of the chain sling shall comply with the requirements of 5.1 except in respect of joining and intermediate links.

### 5.2.2 $\square_{A1}$ Chain $\square_{A1}$ slings assembled by welding

5.2.2.1 Pear-shaped links shall not be used as terminals.

5.2.2.2 Joining links and intermediate links shall have a working load limit not less than that of the chain(s) to which they are connected in a chain sling.

5.2.2.3 The dimensions of joining links and intermediate links shall be such as to ensure adequate articulation with parts of the chain sling which they connect.

5.2.2.4 The component parts of the  $\square_{A1}$  chain  $\square_{A1}$  sling shall comply with the requirements of 5.1.

### 5.2.3 Endless $\square_{A1}$ chain $\square_{A1}$ slings

The manufacture of an endless  $\square_{A1}$  chain  $\square_{A1}$  sling shall be either by the use of:

- a) a mechanical joining device; or
- b) a welded joining link of the same size or one size larger than the nominal size of chain.

### 5.2.4 Tolerance on length

5.2.4.1 When constructing a  $\square_{A1}$  chain  $\square_{A1}$  sling the actual length of each leg shall be the nominal length with a tolerance of  $^{+2}_0$  chain link pitches.

5.2.4.2 When constructing a multi-leg  $\square_{A1}$  chain  $\square_{A1}$  sling, the difference in length between the longest and shortest legs which are nominally the same length shall when measured under equivalent tension comply with the value given in table 2.