



SLOVENSKI STANDARD SIST EN 818-4:1999

01-april-1999

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 a maillons courts - Sécurité - Partie 4: Elingues en chaînes - Classe 8

STANDARD PREVIEW

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EUROPEAN STANDARD

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Descriptors: lifting chains, welded chains, chain links, lifting slings, safety, accident prevention, hazards, dimensions, dimensional tolerances, proof force, tests, verification, marking

English version

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

Chaînes de levage à maillons courts - Sécurité
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Kurzgliedrige Rundstahlketten für Hebezwecke -
Sicherheit - Teil 4: Anschlagketten -
Güteklasse 8

This European Standard was approved by CEN on 1996-03-07. 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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by December 1996, and conflicting national standards shall be withdrawn at the latest by December 1996.

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).

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.

Part 6: Chain slings - Instructions for use and maintenance

A further part or parts will cover fine tolerance chains for chain hoists and other lifting appliances.

This is the first edition of this part of EN 818.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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0 Introduction

This European Standard has been prepared to be a harmonised 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 EN 292 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.

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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.

NOTE: Instructions for use and maintenance of chain slings is covered by prEN 818-6.

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 reference

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.

EN 292-1	Safety of machinery - Basic concepts - General principles for design Part 1: Basic terminology, methodology
EN 292-2: 1991	Safety of machinery - Basic concepts - General principles for design Part 2: Technical principles and specifications
EN 292-2: 1991/A1:1995	Safety of machinery - Basic concepts - General principles for design Part 2: Technical principles and specifications (Amendment 1:1995)
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.
prEN 818-6	Short link chain for lifting purposes - Safety Part 6: Chain slings - Instructions for use and maintenance
prEN 1050	Safety of Machinery - Risk assessment
prEN 1677-1	Components for slings - Safety Part 1: Forged steel components - Grade 8.
prEN 1677-2	Components for slings - Safety Part 2: Forged steel lifting hooks with latch - Grade 8.
prEN 1677-4	Components for slings - Safety Part 4: Links - Grade 8.
EN ISO 9001: 1994	Quality systems - Model for quality assurance in design/development, production, installation and servicing.

3 Definitions

For the purposes of this Part of EN 818 the following definitions apply.

3.1 chain sling: An assembly consisting of chain or chains joined to upper and lower terminals suitable according to the requirements of this European Standard for attaching loads to the hook of a crane or other lifting machine. (See figures 1 to 4).

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

3.3 nominal grade of 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 sling i.e. 8.

3.4 master link: A link forming the upper terminal of a chain by means of which the sling is attached to the hook of a crane or other lifting machine. (See figures 1 to 4).

3.5 length of a leg: For a finished sling, is the length from the lower bearing point of the lower terminal to the upper bearing point of the upper terminal (see figures 1 to 4 as examples).

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 (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 sling to the other end of the chain (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 (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 sling or a force applied as a test to a section of a 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 competent person: A designated person, suitably trained (see 4.18 of EN ISO 9001: 1994) qualified by knowledge and practical experience, and with the necessary instructions to enable the required tests and examination to be carried out.

4 Hazards

The 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 life 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 manufacturers certificate.

Errors in fitting together of assemblies 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 prEN 818-6.

Table 1 contains all the 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 prEN 1050		Relevant clause of annex A of EN 292-2: 1991/ A1:1995	Relevant clause/ sub-clause of this Part of EN 818
1.1.5	Mechanical hazard due to inadequacy of strength	1.3.2 }	5
		4.1.2.3 }	
		4.1.2.4 }	
		4.1.2.5 }	
		4.2.4	6
		1.7.3 }	7
		4.3.2 }	8
		4.2.4	
15	Errors of fitting hazard	1.5.4	5.2

5 Safety requirements

5.1 Components of a chain sling

5.1.1 Chain

The chain shall comply with EN 818-2.

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 prEN 1677-1.

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5.1.3 Links

Master links and intermediate master links shall comply with prEN 1677-4.

Lower terminal links shall comply with prEN 1677-4 except for those clauses relating to link dimensions.

Joining links and intermediate links shall comply with prEN 1677-4 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 prEN 1677-2.

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 prEN 1677-3, which is in the course of preparation.

5.2 Design and construction

5.2.1 Slings assembled with mechanical joining devices

5.2.1.1 The assembly of the sling shall be undertaken in accordance with the chain manufacturers instructions.

5.2.1.2 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 Slings assembled by welding

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

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