Load restraining on road vehicles - Safety - Part 1: Calculation of securing forces

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 12195-1:2010 sisaldab Euroopa standardi EN 12195-1:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 12195-1:2010 consists of the English text of the European standard EN 12195-1:2010.
Standard on kinnitatud Eesti Standardikeskuse 30.11.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
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English Version

Load restraining on road vehicles - Safety - Part 1: Calculation of securing forces

Dispositifs d'arrimage des charges à bord des véhicules routiers - Sécurité - Partie 1: Calcul des forces de retenue

Ladungssicherung auf Straßenfahrzeugen - Sicherheit - Teil 1: Berechnung von Sicherungskräften

This European Standard was approved by CEN on 12 May 2010.

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Foreword

This document (EN 12195-1:2010) 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of an identical text or by endorsement, at the latest by May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.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 12195-1:2003.

The main changes compared to the previous edition of EN 12195-1 are:

a) title changed;

b) k-factor deleted;

c) tilting factor altered;

d) safety factors f_S = 1,1 and f_S = 1,25 and conversion factor f_μ = 0,75 for friction introduced;

e) Annex B on friction factors μ made normative and friction factors revised;

f) test methods for the determination of the friction μ and verification of securing arrangements included;

g) static and dynamic friction factors deleted and friction factors μ in accordance with Annex B introduced.

EN 12195, *Load restraint assemblies on road vehicles — Safety*, consists of the following parts:

— *Load restraining on road vehicles — Safety — Part 1: Calculation of securing forces*

— *Load restraint assemblies on road vehicles — Safety — Part 2: Web lashing made from man-made fibres*

— *Load restraint assemblies on road vehicles — Safety — Part 3: Lashing chains*

— *Load restraint assemblies on road vehicles — Safety — Part 4: Lashing steel wire ropes*

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 part of EN 12195 has been prepared to provide a means of conforming with the essential safety requirements to calculate securing forces for load restraint assemblies to be used in the Common European Market and thus enabling unrestricted transport of cargo.

This part of EN 12195 contributes to the harmonization of the calculation of load securing on road vehicles by giving the different procedures and equations of load securing.

Blocking and lashing procedures and appropriate combinations are described for load securing. The equations used are based on relevant scientific and, in particular, on mechanical laws and practical experience. For this purpose, a suitable vehicle with appropriate assemblies for blocking, bracing and securing should be used to ensure safe load transportation. Transportation safety should be guaranteed by the dimensioning of load securing according to this European Standard. The extent to which the hazards acting on the load during transport and resulting from the forces of load are addressed is given in the scope of this European Standard. In addition, load restraint assemblies for securing of loads on vehicles with respect to their securing and load bearing ability, which are not covered by this European Standard, should conform to the other parts of this standard and to EN ISO 12100-2.

1 Scope

This European Standard is applicable to the design of securing methods (blocking, lashing, and combinations) for securing of loads for surface transport by road vehicles or parts of them (lorries, trailers, containers and swap bodies), including their transport on vessels or by rail and/or combinations thereof. Hump shunting with acceleration over 1 g during railway transport is excluded, as it is not foreseen in combined transport. (Web lashings see EN 12195-2, lashing chains see EN 12195-3, lashing steel wire ropes see EN 12195-4).

This European Standard does not apply for vehicles with a total weight equal to or lower than 3 500 kg.

NOTE Lighter vehicles can have driving characteristics, which give higher values of acceleration on the road.

For dimensioning of load securing a distinction is made between stable loads and loads liable to tilting.

Furthermore, the acceleration coefficients for surface transport are specified.

For over top lashing the force loss in the tension force of the lashing at the outer edges between load and lashing is taken into account. The securing forces to be chosen for calculation in this EN 12195-1 are static forces produced by blocking or tensioning of lashings and dynamic forces, which act on the lashing as a reaction of the load movements.

Examples for the application of calculations are given in Annex A.

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 12195-2:2000, *Load restraint assemblies on road vehicles — Safety — Part 2: Web lashing made from man-made fibres*

EN 12195-3:2001, *Load restraint assemblies on road vehicles — Safety — Part 3: Lashing chains*

EN 12195-4:2003, *Load restraint assemblies on road vehicles — Safety — Part 4: Lashing steel wire ropes*

EN 12642:2006, *Securing of cargo on road vehicles — Body structure of commercial vehicles — Minimum requirements*

EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system (ISO 7500-1:2004)*

3 Terms, definitions, symbols, units and abbreviations

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

3.1 General terms and definitions

3.1.1
lashing
securing method where bendable devices are used in the securing of the load on a load carrier

3.1.2
lashing device
flexible device used in the securing of the load on a load carrier