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Safety requirements for cableway installations designed to carry persons - Carriers - Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow-hangers

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

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NATIONAL FOREWORD

See Eesti standard EVS-EN 13796-1:2017 sisaldab Euroopa standardi EN 13796-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 13796-1:2017 consists of the English text of the European standard EN 13796-1:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 29.03.2017.	Date of Availability of the European standard is 29.03.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Safety requirements for cableway installations designed to carry persons - Carriers - Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow-hangers

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Véhicules - Partie 1 : Attaches, chariots, freins embarqués, cabines, sièges, voitures, véhicules de maintenance, agrès

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Fahrzeuge - Teil 1: Befestigungen am Seil, Laufwerke, Fangbremsen, Kabinen, Sessel, Wagen, Instandhaltungsfahrzeuge, Schleppvorrichtungen

This European Standard was approved by CEN on 8 December 2014.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This European Standard (EN 13796-1:2017) has been prepared by Technical Committee CEN/TC 242 "Safety requirements for passenger transportation by rope", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, by September 2017 at the latest, and all conflicting national standards shall be withdrawn no later than September 2017.

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

This document supersedes EN 13796-1:2005.

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 2000/9/EC.

For the relationship with EU Directive 2000/9/EC, see informative Annex ZA, which is an integral part of this document.

EN 13796 comprises the following parts under the general title *Safety requirements for cableway installations designed to carry persons – Carriers:*

— *Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow-hangers*

— *Part 2: Slipping resistance test for grips*

— *Part 3: Fatigue tests.*

The main changes to the previous edition of EN 13796-1 are the following:

— in 6.2.3, the subclause has been reorganized to clarify its application, and the force coefficient values for verifying the effects of wind have been changed;

— in 6.2.15, 11.2.1.1, 11.2.1.2 and 12.1.2, the calculation of the walls and the definition of the loads to be taken into consideration for this calculation have been changed to take account of service experience and so as not to differentiate the dimensioning of the walls based on the position of the passengers (seated or standing);

— in 6.3.3.2.2 a) 2) and 6.3.3.2.3, clarifications of the dynamic stresses have been provided to be taken into account when carriers pass through stations;

— addition of 6.7 concerning fire prevention and firefighting;

— in 7.2.2.3, the subclause was rewritten to clarify its application;

— in 7.3.4, the tolerances on the geometry of the grooves of the haulage rope fixing drum are made consistent with those relating to the rope diameters defined in EN 12385-8;

— in 7.4.2.3, the taper angle values have been changed to comply with the values in the EN 12927 series;

— in 7.6.2.6, the tolerances on the geometry of the chapeau de gendarme drum grooves have been changed to comply with 7.2.3.1;

— in 9.3, the conditions for verifying the load on one of the wheels of a chassis of a funicular railway have been clarified, so that they are not limited solely to braking with the on-board brake;

— in 10.1 a), determination of the triggering threshold for the on-board brake in the event of failure of a haulage rope is clarified;

— in 11.2.1.1, a requirement was added regarding the material used for the glazing of the cabins, which shall not be dangerous in the event of breakage;

— in 11.4.1.2, a clarification regarding chairs has been added for the transport of persons with reduced mobility with their specific equipment;

— in 12.1.3, a paragraph has been added regarding accessibility for wheelchair passengers in order to be consistent with 11.2.1.4;

— in Annex ZA, the table has been supplemented.

This document forms part of the standards programme approved by the CEN Technical Board (CEN/BT) on safety requirements for cableway installations designed to carry persons. This programme comprises the following standards:

— EN 1907, *Safety requirements for cableway installations designed to carry persons — Terminology*

— EN 12929 series, *Safety requirements for cableway installations designed to carry persons — General requirements*

— EN 12930, *Safety requirements for cableway installations designed to carry persons — Calculations*

— EN 12927 series, *Safety requirements for cableway installations designed to carry persons — Ropes*

— EN 1908, *Safety requirements for cableway installations designed to carry persons — Tensioning devices*

— EN 13223, *Safety requirements for cableway installations designed to carry persons — Drive systems and other mechanical equipment*

— EN 13796 series, *Safety requirements for cableway installations designed to carry persons — Carriers*

— EN 13243, *Safety requirements for cableway installations designed to carry persons — Electrical equipment other than for drive systems*

— EN 13107, *Safety requirements for cableway installations designed to carry persons — Civil engineering works*

— EN 1709, *Safety requirements for cableway installations designed to carry persons — Pre-commissioning inspection, maintenance and operational inspection and checks*

— EN 1909, *Safety requirements for cableway installations designed to carry persons — Recovery and evacuation*

— EN 12397, *Safety requirements for cableway installations designed to carry persons — Operation*

— EN 12408, *Safety requirements for cableway installations designed to carry persons — Quality assurance*

Together these form a series of standards regarding design, manufacture, construction, maintenance and operation of all cableway installations designed to carry persons.

According to the CEN/CENELEC internal regulations, the national standards organizations of the following countries are required to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, the Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, the Republic of Serbia, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the safety requirements applicable to carriers for cableway installations designed to carry persons. It is applicable to the various types of installations and takes into account their environment.

It includes requirements relating to the prevention of accidents and the protection of workers, without affecting the application of national requirements.

National requirements relating to construction law or statutory law, or to the protection of specific groups of people, shall not be affected.

It does not apply to installations for the transportation of goods or to lifts.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable to its application. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN *795, Personal fall protection equipment — Anchor devices*

EN 1709, *Safety requirements for cableway installations designed to carry persons — Pre-commissioning inspection, maintenance and operational inspection and checks*

EN 1907, *Safety requirements for cableway installations designed to carry persons — Terminology*

EN 1908, *Safety requirements for cableway installations designed to carry persons — Tensioning devices*

EN 1909, *Safety requirements for cableway installations designed to carry persons — Recovery and evacuation*

EN 1993-1-9, *Eurocode 3: Design of steel structures — Part 1-9: Fatigue*

EN 1999-1-3, *Eurocode 9: Design of aluminium structures — Part 1-3: Structures susceptible to fatigue*

EN 10025 series, *Hot-rolled products of structural steels*

EN 10083 series, *Quenched and tempered steels*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 12397, *Safety requirements for cableway installations designed to carry persons — Operation*

EN 12408, *Safety requirements for cableway installations designed to carry persons — Quality assurance*

EN 12927 series, *Safety requirements for cableway installations designed to carry persons — Ropes*

EN 12929 series, *Safety requirements for cableway installations designed to carry persons — General provisions*

EN 12930, *Safety requirements for cableway installations designed to carry persons — Calculations*

EN 13107, *Safety requirements for cableway installations designed to carry persons — Civil engineering works*

EN 13223, *Safety requirements for cableway installations designed to carry persons — Drive systems and other mechanical equipment*

EN 13243, *Safety requirements for cableway installations designed to carry persons — Electrical installations other than for drive systems*

EN 13796-2, *Safety requirements for cableway installations designed to carry persons — Carriers — Part 2: Slipping resistance tests for grips*

EN 13796-3, *Safety requirements for cableway installations designed to carry persons — Carriers — Part 3: Fatigue testing*

EN ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1)*

EN ISO 898 series, *Mechanical properties of fasteners made of carbon steel and alloy steel (ISO 898 series)*

EN ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817)*

EN ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1)*

EN ISO 9606-2, *Qualification testing of welders — Fusion welding — Part 2: Aluminium and aluminium alloys (ISO 9606-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1907 and the following apply:

3.1
gravitational driving force
F_T

$$F_T = m \times g \times \sin\alpha$$

where

m = mass of the vehicle

g = 9,81 m.s^{-2}

α = average incline of the track over the relevant section

Note 1 to this clause: For cable cars, this shall be the average of all angles of the cable (carrying hauling rope or carrying cable) uphill and downhill from the vehicle.

3.2
slipping resistance force
F
characterizes the resistance to slipping provided by a grip.

Note 1 to this clause: A distinction is made between the following slipping resistance forces when they occur: