



SLOVENSKI STANDARD
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Safety requirements for cableway installations designed to transport persons - Carriers - Part 2: Slipping resistance tests for grips

Sicherheitsanforderungen an Seilbahnen für die Personenbeförderung - Fahrzeuge - Teil 2: Klemmenabziehversuch

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Véhicules - Partie 2 : Essai de résistance au glissement des attaches

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EUROPEAN STANDARD

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English Version

Safety requirements for cableway installations designed to transport persons - Carriers - Part 2: Slipping resistance tests for grips

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Véhicules - Partie 2 : Essai de résistance au glissement des attaches

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This European Standard was approved by CEN on 8 December 2014 and includes Amendment 1 approved by CEN on 20 April 2022.

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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Contents	Page
European foreword.....	3
1 European scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Symbols and abbreviations	5
5 General information.....	6
6 Parts to be tested.....	6
7 Descriptive information prior to the test.....	6
8 Examination prior to the test.....	6
9 Test requirements	7
10 Slipping resistance force	7
11 Conclusion of the test.....	8
11.1 Evaluation of test results.....	8
11.2 Test report.....	8
Annexe ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/424.....	9

SIST EN 13796-2:2017+A1:2022

<https://standards.iteh.ai/catalog/standards/sist/0ecc4876-5df7-4a72-85f5-1b2ea770a151/sist-en-13796-2-2017a1-2022>

European foreword

This document (EN 13796-2:2017+A1:2022) has been prepared by Technical Committee CEN/TC 242 "Safety requirements for cableway installations designed to carry persons", 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 December 2022 at the latest, and all conflicting national standards shall be withdrawn no later than December 2022.

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 replaces EN 13796-2:2017.

This document includes amendment 1 approved by the CEN on 20 April 2022.

The start and end of the text added or modified by the amendment are indicated in the text with ! and " respectively.

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 tests for grips;*
- *Part 3: Fatigue testing.*

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 (all parts), *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 (all parts), *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 13796-2:2017+A1:2022 (E)

- EN 13796 (all parts), *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 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*.

This document has been prepared as part of a standardisation request made to CEN by the European Commission and the European Free Trade Association, and supports the essential requirements of the (EU) Directive(s)/Regulation(s).

For the relationship with EU Directive(s) or Regulation(s), see informative Annex ZA, which forms an integral part of this document.

The user should address any feedback or questions regarding this document to their country's national standards organisation. A comprehensive list of these organisations can be found on the CEN website.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are required 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, the Netherlands, Norway, Poland, Portugal, the Republic of North Macedonia, the Republic of Serbia, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 European scope

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

This European Standard describes the requirements to be met when testing the slipping resistance of grips clamped

- on the haulage or carrying hauling rope of carriers of monocable or bicable aerial ropeways with fixed or detachable grips, covered by EN 13796-1:2017;
- on the towing rope of ski-tows with fixed grips, covered by EN 13796-1:2017.

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 1907:2017, *Safety requirements for cableway installations designed to carry persons — Terminology*

EN 13796-1:2017, *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*

EN ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1907:2017 and EN 13796-1:2017 apply.

4 Symbols and abbreviations

- | | | |
|--------------|---|------|
| — F_{lab} | slipping resistance force determined experimentally in the laboratory | (kN) |
| — F_{max} | maximum slipping resistance force | (kN) |
| — F_{theo} | calculated slipping resistance force | (kN) |
| — l_{gtot} | total slipping length | (m) |

5 General information

The corresponding risk factors and safety measures to be taken into consideration in this standard appear in EN 13796-1:2017.

It is recommended that testing be carried out by a qualified testing laboratory in accordance with the provisions set out in EN ISO/IEC 17025:2017.

NOTE The testing laboratory does not need approval or authorisation from third parties for this process.

The test will make it possible to validate the field of use of the grip proposed by the manufacturer.

6 Parts to be tested

The geometry and materials of the test piece shall be identical to the series-manufactured components. Their methods of manufacture shall be equivalent. In particular, when the test piece is galvanised, the component shall also be galvanised.

The test piece shall be clearly identified by a mark.

7 Descriptive information prior to the test

The test piece to be tested is described in a manual that contains the following information and documents, enabling laboratories to understand the function of the grip and design suitable test requirements:

- general description of the grip;
- production drawings of the grip;
- descriptions and explanations required to understand the above-mentioned drawings and the mode of operation of the grip;
- field of use of the grip, including F_{theo} .

8 Examination prior to the test

A visual examination shall be carried out prior to the test in order to verify that the test piece complies with the above-mentioned descriptive information.

9 Test requirements

The test consists of subjecting a grip clamped on a rope to an increasing tensile force until it starts to slip, while recording the change in its resistance to slipping.

- whatever the field of use of the grip, the test shall be carried out on a parallel-lay galvanised rope. If the field of use of the grip specifies several nominal machining diameters for the jaws, corresponding to as many nominal rope diameters, the test shall only be carried out on the largest diameter;
- the rope shall be subjected to a tensile force corresponding to 1/6 of its breaking load;
- the grip shall be attached in accordance with the conditions specified by the manufacturer;
- the equipment used to transmit the force shall allow controlled and gradual application;
- the equipment for measuring the slipping resistance force shall enable a continuous permanent record to be made of the applied force based on time;
- the tensile force on the grip shall be applied so that the resultant of the slipping force coincides with the axis of the rope;
- the tensile force on the grip shall be applied progressively until slipping starts and shall be maintained to cause a minimum slippage of at least 5 mm;
- the test shall be carried out ten times. The total $l_{g\text{ tot}}$ slipping length must be at least:

$$l_{g\text{ tot}} \geq \frac{P}{N} [m] \quad (1)$$

where

P is the length of lay [m]

N is the number of strands

These tests may be carried out successively without opening the grip.

10 Slipping resistance force

The F_{lab} slipping resistance force is equal to the average of the maximum F_{max} values obtained in the ten tests:

$$F_{\text{lab}} = \frac{\sum F_{\text{max}}}{10} \quad (2)$$

EN 13796-2:2017+A1:2022 (E)

11 Conclusion of the test

11.1 Evaluation of test results

The test is deemed satisfactory if the F_{lab} is greater than the F_{theo} and if no movement of the cable making up the test rope is found in the area affected by the slipping of the grip.

11.2 Test report

The procedures and results shall be recorded in a test report.

The test report must meet the requirements of EN ISO/IEC 17025:2017.

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