SLOVENSKI STANDARD
SIST EN 12929-1:2015

01-maj-2015

Nadomešča:
SIST EN 12929-1:2005

Varnostne zahteve za žičniške naprave za prevoz oseb - Splošne zahteve - 1. del: Zahteve za vse naprave

Safety requirements for cableway installations designed to carry persons - General requirements - Part 1: Requirements for all installations

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Allgemeine Bestimmungen - Teil 1: Anforderungen an alle Anlagen

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Dispositions générales - Partie 1: Prescriptions applicables à toutes les installations

iTeh STANDARD PREVIEW
(standards.iteh.ai)
https://standards.iteh.ai/catalog/standards/sist/...
69e01bac7579/sist-en-12929-1-2015

Ta slovenski standard je istoveten z: **EN 12929-1:2015**

ICS:

45.100	Oprema za žičnice	Cableway equipment

SIST EN 12929-1:2015 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 12929-1:2015

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

SIST EN 12929-1:2015

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12929-1

January 2015

ICS 45.100

Supersedes EN 12929-1:2004

English Version

Safety requirements for cableway installations designed to carry persons - General requirements - Part 1: Requirements for all installations

Prescriptions de sécurité pour les installations à câbles destinées au transport des personnes - Dispositions générales - Partie 1: Prescriptions applicables à toutes les installations

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Allgemeine Bestimmungen - Teil 1: Anforderungen an alle Anlagen

This European Standard was approved by CEN on 25 November 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3ab21b-b102-4e15-b400-69e01bac7579/sist-en-12929-1-2015

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2015 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 12929-1:2015 E

SIST EN 12929-1:2015

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69c01bac7579/sist-en-12929-1-2015

SIST EN 12929-1:2015

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7379/sist-en-12929-1-2015

SIST EN 12929-1:2015

Tables

Figures

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

SIST EN 12929-1:2015

Foreword

This document (EN 12929-1:2015) has been prepared by Technical Committee CEN/TC 242 “Safety requirements for cableway systems for passenger transportation”, 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, at the latest by July 2015, and conflicting national standards shall be withdrawn at the latest by July 2015.

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.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

This document replaces EN 12929-1:2004.

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01baa7570/sist-en-12929-1-2015

The following main changes have been made to EN 12929-1:2004:

— In Clause 1 (formerly Subclause 1.1) supplementations have been made with regard to the protection of workers and the passenger circle.

— In 4.2.1 (formerly Subclause 1.3.1) EN 12929-1 has also been included with regard to the exception to the requirements.

— In Clause 3 the terms and definitions have been removed, as the reference to EN 1907 is sufficient.

— The former Subclause 4.2.2 “Safety analysis” has been removed, as the requirements listed there are established in Directive 2000/9/EC.

— In 5.2.2 the limit for the permissible transverse acceleration for funicular railways has been raised.

— In 5.2.4 detailed regulations for establishing the passing loop of funicular railways have been included.

— 6.1 has been added and establishes the basic requirements for the limit profile. The following subclauses in Clause 6 have been promoted.

— In 6.3.1 the general requirements for the limit profile have been supplemented to include aerial ropeways.

— In 6.3.2 by changing the reduction coefficient, alignment with EN 12930:2014 has been achieved and the ice curtain for the lateral deviation of the ropes has been redefined.

— In 6.3.4 the regulations with regard to the minimum values for the angle of the transverse sway of the carriers have been supplemented.

SIST EN 12929-1:2015

— In 6.3.5 the permissible impact speed for reversible aerial ropeways has been increased.

— In 6.3.7 the regulations with regard to the guides have been adopted from the former 7.3.2, as the guides influence the limit profile. The regulations have been supplemented and clarified.

— In 6.4.1 the regulations for the limit profile of ski-tows with regard to the combination of transverse and longitudinal sway have been established congruent to the aerial ropeways.

— In 6.4.5 the regulations with regard to the rotation of tow-hangers have been clarified.

— In 6.5 and 6.6 regulations with regard to the limit profile for signal cables, restraint ropes, marker ropes and ropes on evacuation railways have been adopted from EN 12930, whereby they are aligned with ropes on aerial ropeways.

— 7.1 has been revised in terms of content and structure.

— 7.3 has been revised in terms of content and structure and includes regulations regarding the safety distances which were previously covered in 7.5. The former 7.3.2 regarding guides has been moved to 6.3.7, as the limit profile is influenced by guides.

— In 7.4 the assumptions for the verification of tracks for reversible aerial ropeways, for pulsed movement aerial ropeways and bi-cable aerial ropeways have been clarified.

— In 7.5 regulations for ski-tows have been revised in terms of content and structure.

— In 8.1.1 the maximum height above ground has been restricted to the height for a rope that is carrying passengers.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

— In 8.2 and 8.3 the height above ground for aerial ropeways has been revised in terms of content and structure.

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-60e01bea7570/sist-en-12929-1-2015

— In 9.2 the maximum operating speeds of cableway installations have been revised in terms of content and structure.

— In 10.1.1 the regulations for the omission of a recovery drive have been concretised.

— In 10.1.6 the regulations for the independence of the recovery drive from the main drive have been concretised.

— In 10.2.4 the residual risk of a standstill caused by the on-board brakes has been taken into consideration.

— In 10.3.2, the requirement for the arrangement of the emergency stop buttons which are accessible to all persons when entering and exiting ski-tows has been restricted.

— In 10.3.4 the permissible stopping distances for ski-tows have been modified.

— The previous point 10.3.5, which established the design of the brakes for ski-tows, has been deleted.

— In 11.1.5 the requirements for work positions and passageways for operating personnel has been modified.

— In 11.1.7 the distances between the carriers and the loading platform edge have been modified.

— In 11.1.9 additional requirements have been included for the unloading areas of chairlifts.

SIST EN 12929-1:2015

— In 11.1.10 the height of the seat surface of chairlifts in the loading and unloading areas has been modified.

— In 11.2.3 the execution of the stabilisation area, the safety area and the ramp after the loading area has been modified.

— In 11.2.11 the occupation instructions in the area of the valley station of chairlifts and the reference to the relevant Standard have been modified.

— In 11.3.2 the requirements for unloading areas of chairlifts have been modified and supplemented.

— In 11.3.4 for the limits of the height above ground in the approach area the option of locking system have been taken into consideration.

— In 11.3.5 the regulations for the ramps after the unloading area of chairlifts have been clarified.

— In 11.3.6 the existing requirement for chairlifts with carriers with fixed grips was further extended to chairlifts with detachable grips.

— In 11.3.7 the regulations with regard to the emergency unloading area have been clarified.

— In 11.3.8 the passenger instructions in the area of the mountain station of chairlifts and the reference to the relevant Standard have been modified.

— In 11.6.1 the regulations for the loading area of ski-tows have been supplemented.

— In 11.6.4 the passenger instructions in the area of the valley station of ski-tows and the reference to the relevant Standard have been modified.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

— 11.7.2 was reformulated as the height above ground of a ski-tow has not been defined.

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bae7579/sist-en-12929-1-2015

— In 11.7.9 the location of the safety devices at the unloading area of ski-tows has been clarified.

— In 12.4.1 the exception option of omitting a monitoring of the movement between the track rope and the haul rope in the case of bi-cable uni-directional aerial ropeways has been removed, as this no longer complied with the “state of the art” and a time span specified in which no switch-off shall take place.

— 12.6.2 has been reformulated as the height above ground of a ski-tow was not defined.

— In 12.6.3 the regulations for low level ski-tows with regard to twist have been supplemented.

— In 13.1 the regulations for the evacuation plan were removed and exclusive reference is made to EN 1909.

— In 13.2 a supplementary regulation has been included for the evacuation pathway for funicular railways.

— In 14.1 the hazards from fire events in the vicinity of the cableway installation have been supplemented.

— In 14.2 the requirement for inspecting the rope has been supplemented with established or assumed lightning, as EN 12929-2 no longer specifies this regulation.

— In 14.4 the requirement of a wind measurement device on funicular railways has been taken into consideration.

— In 15.4 the access to the line of funicular railways with automatic operation has been clarified.

— In 15.6 the access to the carriers of funicular railways with automatic operation has been clarified.

SIST EN 12929-1:2015

— In 15.7 the regulations regarding special safety devices on the carriers of funicular railways with automatic operation have been removed and exclusive reference is made to EN 13796-1.

— In Annex A the sketch and the key for explaining 11.2 has been adapted to the Standard specifications.

— In Annex B the sketch and the key for explaining 11.3 has been adapted to the Standard specifications.

— In Annex C the technical documents have been supplemented and clarified.

— In Annex D the A-deviation for Germany has been removed.

— Annex ZA has been updated.

EN 12929 with the generic title “Safety requirements for cable way installations designed to carry persons - General requirements”, consists of the following parts:

— *Part 1: Requirements for all installations.*

— *Part 2: Additional requirements for reversible bi-cable aerial ropeways without carrier truck brakes.*

Part 1 of this document deals with general requirements applicable to all cableway installations designed to carry persons; Part 2 deals with the supplementary requirements applicable to reversible bi-cable aerial ropeways without carrier truck brakes.

This European Standard forms part of a series of European Standards concerning safety requirements for cableway installations designed to carry persons. This series of Standards comprises the following parts:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

— EN 1907 – *Terminology*

— EN 12929 – *General requirements*

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

— EN 12930 – *Calculations*

— EN 12927 (all parts) – *Ropes*

— EN 1908 – *Tensioning devices*

— EN 13223 – *Drive systems and other mechanical equipment*

— EN 13796 (all parts) – *Carriers*

— EN 13243 – *Electrical equipment other than for drive systems*

— EN 13107 – *Civil engineering works*

— EN 1709 – *Precommissioning inspection, maintenance and operational inspection and checks*

— EN 1909 – *Recovery and evacuation*

— EN 12397 – *Operation*

— EN 12408 – *Quality assurance*

This series of Standards forms a complete set with regard to the design, manufacture, erection, maintenance and operation of all cableway installations designed to carry persons.

SIST EN 12929-1:2015

In respect of ski-tows, the drafting of this document has been guided by the works of the International Organisation for Transportation by Rope (OITAF).

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

SIST EN 12929-1:2015

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Belgium, Bulgaria, Denmark, Germany, the former Yugoslav Republic of Macedonia, Estonia, Finland, France, Greece, Ireland, Iceland, Italy, Croatia, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Norway, Austria, Poland, Portugal, Romania, Sweden, Switzerland, Slovakia, Slovenia, Spain, Czech Republic, Turkey, Hungary, United Kingdom and Cyprus.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

SIST EN 12929-1:2015

1 Scope

This European Standard specifies the general regulations for safety requirements for cableway installations designed to carry persons. Supplementary safety requirements for reversible bi-cable aerial ropeways without carrier truck brakes are established in EN 12929-2.

This Part of the EN 12929 defines general technical characteristics and prescribes design principles and general safety requirements.

This Part of the EN 12929 does not deal with details of operation and maintenance, calculations and detailed requirements for the manufacture of components.

This Part of the EN 12929 includes requirements relating to the prevention of accidents and the protection of workers irrespective of the application of national regulations.

National regulations of a building or federal/state nature or which serve to protect particular groups of people remain unaffected.

It may not always be possible for all types of cableway installation to transport all particular groups of people (e.g. persons with restricted mobility). The objective should be, however, for a cableway installation to enable the transportation of the largest possible passenger population.

This standard does not apply to cableway installations for the transportation of goods or to lifts.

2 Normative references

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8bc...-1-2015

EN 1709, *Safety requirements for cableway installations designed to carry persons — Precommissioning inspection, maintenance, 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 12385-8, *Steel wire ropes – Safety – Part 8: Stranded hauling and carrying-hauling ropes for cableway installations designed to carry persons*

EN 12385-9, *Steel wire ropes – Safety – Part 9: Locked coil carrying ropes for cableway installations designed to carry persons*

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

EN 12927 (all parts), *Safety requirements for cableway installations designed to carry persons — Ropes*

EN 12929-2, *Safety requirements for cableway installations designed to carry persons — General requirements — Part 2: Additional requirements for reversible bi-cable aerial ropeways without carrier truck brakes*

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*

SIST EN 12929-1:2015

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 equipment other than for drive systems*

EN 13796 (all parts), *Safety requirements for cableway installations designed to carry persons — Carriers*

EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100)*

EN ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857)*

3 Terms and definitions

For the purposes of this document, the terms and definitions in accordance with EN 1907 apply.

4 Safety requirements applicable to cableway installations

4.1 General principles

4.1.1 Stringent safety requirements are of the utmost importance for the design, manufacture, erection, maintenance and operation of cableway installations.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The design, manufacture, erection, maintenance and operation of cableways shall only be entrusted to contractors and experts who have the necessary knowledge and experience and who can ensure careful execution of the installation and proper management of the operation.

SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3a6f31-6163-4a15-b4f6-69e01bac7579/sist-en-12929-1-2015

All the components shall be calculated exactly, be of a good mechanical and electrical design and be manufactured from adequate, defect-free materials possessing the required characteristics.

4.1.2 All components shall be kept in working order and in good condition. Reference is made to EN 1709 and EN 12397.

4.1.3 In addition to the European Standards specific to cableway installations, the relevant European specifications shall be used for the design, manufacture, erection, maintenance and operation of cableways.

4.1.4 This document takes into account, in certain cases, the careless behaviour of passengers. In all cases, use of the cableway in accordance with its intended use is assumed and not misuse of the installation.

4.2 Exceptions

4.2.1 Exceptions to the requirements of Standards EN 1709, EN 1908, EN 1909, EN 12385-8, EN 12385-9, EN 12397, EN 12927 (all parts), EN 12929-1, EN 12929-2, EN 12930, EN 13107, EN 13223, EN 13243, EN 13796 (all parts) are permissible, particularly in the case of innovation. These exceptions shall be justified by a safety analysis and offer at least an equivalent level of safety.

4.2.2 Exceptions to this Standard are also permissible in the case of replacement of components in existing installations.

SIST EN 12929-1:2015

4.3 General safety requirements applicable to the installations and to their components

4.3.1 General safety principles

All cableway installations designed to carry persons shall be designed, manufactured and operated by applying the following principles in the order indicated:

a) avoid or at least limit the risks by appropriate design or construction measures;

b) take the necessary protective measures with respect to remaining risks which cannot be avoided by design and construction measures;

c) define and make known the precautions to be taken to reduce those risks which it has not been possible to avoid completely by the previous preventative and protective measures.

In the case of installations and components complying with EN 1709, EN 1908, EN 1909, EN 12397, EN 12927 (all parts), EN 12929 (all parts), EN 12930, EN 13107, EN 13223, EN 13243 and EN 13796 (all parts), it can be assumed that these safety principles are observed.

4.3.2 Possible injuries to persons

Those hazards which can in particular result in the following injuries to persons shall be taken into account:

a) injuries caused by falls (including those caused by carriers falling);

b) bruising, crushing or injury by trapping of persons (other than falls);

c) impairments to health resulting from extended exposure of persons to adverse weather conditions;

d) other dangers to health, for example electrocution, burns, noise, air pollution, inhalation of poisonous gases, etc.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12929-1:2015
https://standards.iteh.ai/catalog/standards/sist/8b3afd21-61c2-4a15-b4f0-69e01bac7579/sist-en-12929-1-2015

4.3.3 Hazard scenarios

The following events can give rise to hazardous situations which are avoided or reduced by the safety requirements of this document:

a) failure (rupture, malfunction or non-functioning) of a component of an installation;

b) breakdown of correct interaction between the components in an installation or between the components and their environment;

c) unforeseeable incorrect behaviour of persons (passengers, operating personnel or third parties) as well as the foreseeable misuse by these persons;

d) foreseeable external events (for example, caused by avalanches, landslides, rock falls, lightning, piste grooming machines, aircraft).

The following events in particular shall be considered:

— failure of or defects in the supporting structures of the civil engineering structures;

— defective condition of loading and unloading areas;

— failure of tensioning systems and rope end fixings;

— failure of rope support and guide elements;