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Linbaneanläggningar – Säkerhetsregler för linbaneanläggningar för persontransport – Terminologi

Safety requirements for cableway installations designed to carry persons – Terminology

ICS 01.040.45; 45.100

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Supersedes ENV 1907:1999

English version

Safety requirements for cableway installations designed to carry persons - Terminology

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Terminologie

Sicherheitsanforderungen für Seilbahnen und Schleppaufzüge des Personenverkehr - Begriffsbestimmungen

This European Standard was approved by CEN on 14 January 2005.

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.

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 Central Secretariat has the same status as the official versions.

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

EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Contents

Page

Foreword

This document (EN 1907:2005) 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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document supersedes ENV 1907:1999.

This document forms part of the standards programme adopted by the CEN Technical Board (CEN/BT) in relation to safety requirements for cableway installations designed to carry persons.

This programme comprises the following standards*:*

— *1:* prEN 1907, *Safety requirements for cableway installations designed to carry persons - Terminology*

— *2:* EN 12929, *Safety requirements for cableway installations designed to carry persons - General requirements*

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

— *4:* EN 12927, *Safety requirements for passenger transportation by rope - Ropes*

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

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

— *7:* prEN 13796, *Safety requirements for cableway installations designed to carry persons - Carriers*

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

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

— *10:* EN 1709, *Safety requirements for cableway installations designed to carry persons – Precommissioning inspection, maintenance, operational inspection and checks.*

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

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

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

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

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).

Annex B of the document has been drawn up taking into account, in certain cases, the terms used in the ANSI standard B77-1:1990 "Aerial tramways and lifts - Surface lifts and tows - Safety requirements".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document defines general terms used in the safety requirements for cableway installations designed to carry persons.

The document concerns terms used in the design, manufacture, erection, maintenance and operation of the installations and is restricted to:

— those terms which form part of the vocabulary specific to these installations;

— those terms, whether scientific, technical or in every day use, which have a particular meaning in this field or which it appears necessary to define in greater detail.

The terms apply both to a particular installation and to their components.

Terms which are specific to standards which are listed in the foreword are defined in each of these standards.

This document does not apply to installations for the transportation of goods, nor to inclined lifts.

In the application of this document, the following definitions are applicable and have been given the reference numbers below.

2 General terms

Terms printed in **bold** type in the definitions are themselves defined in the text.

2.1
cableway installation designed to carry persons
installations made up of several **components**, designed, manufactured, assembled and put into service with the object of carrying persons. These on-site installations are used for the carriage of persons in **vehicles** or by **towing devices**, whereby the suspension and/or traction is provided by **ropes** positioned along the line of travel.

2.1.1
component
elementary part, group of parts, subassembly or complete unit incorporated in a **cableway installation**

NOTE Components may be mechanical in nature, or they may equally belong to the fields of civil engineering, electrical, pneumatic or hydraulic equipment, or automation and control.

2.1.1.1
safety component
any basic **component**, set of **components**, subassembly or complete assembly of equipment and any device incorporated in the installation for the purpose of ensuring a safety function and identified by the safety analysis, the **failure** of which endangers the safety or health of persons, be they users, operating personnel or third parties

3 Types of installations

3.1
aerial ropeway
cableway in which the **carriers** are suspended from one or several ropes

NOTE The term aerial ropeway, without further qualification, is generally applicable no matter how the ropes move or what functions they perform, how they are connected to the carriers and what type the carriers are.

3.1.1
reversible aerial ropeway; jigback
aerial ropeway whose **carriers** move backwards and forwards between the **ropeway stations**

NOTE These aerial ropeways are usually equipped with two closed carriers or groups of carriers with fixed grips.

3.1.2
uni-directional aerial ropeway
aerial ropeway whose **carriers** always travel in the same direction along their path

NOTE The carriers may be connected to the rope by fixed or detachable grips.

3.1.2.1
continuous movement aerial ropeway
uni-directional aerial ropeway whose **haulage rope(s)** or **carrying-hauling rope(s)** move(s) at constant speed

3.1.2.2
pulsed movement aerial ropeway
uni-directional aerial ropeway whose **haulage rope(s)** or **carrying-hauling rope(s)** move(s) either intermittently or at a speed which varies periodically as a function of the position of the **carriers**

NOTE The carriers or groups of carriers are usually connected to the rope by fixed grips.

3.1.3
monocable aerial ropeway
aerial ropeway in which the **carriers** are suspended from and hauled by a single rope

3.1.4
double-monocable aerial ropeway
term in current use for a **aerial ropeway** in which the **carriers** are both suspended from and hauled by two **rope loop**s or a single rope arranged in a double loop

3.1.5
bicable aerial ropeway
aerial ropeway in which the **carriers** are suspended from and hauled by separate ropes or groups of ropes

3.1.6
gondola lift
term in current use for a **uni-directional aerial ropeway** with several small **closed carriers**

3.1.7
bucket lift
uni-directional aerial ropeway in which the **carriers** are **buckets**

3.1.8
chairlift
uni-directional aerial ropeway in which the **carriers** are **chairs**

3.2
funicular railway
cableway in which the **carriers** are hauled by one or several ropes along a track which may lie on the ground or be supported by fixed structures

NOTE The carriers are generally supported on wheels which may be of different types, with the track designed accordingly.

3.3
ski-tow; draglift
cableway in which the passengers, either wearing skis or equipped with suitable special appliances, are towed along a prepared **track** by means of **tow-hangers** hauled by a rope

3.3.1
low level ski-tow
type of **ski-tow** in which the rope runs at such a height that the users can grip it directly or by means of short **tow-hangers**

NOTE A fibre rope may be used. The tow-hangers are usually handled with fixed or detachable grips. These ski-tows may be portable.

4 Ropes and end fixings

4.1
static rope; fixed rope
rope anchored at least at one of its ends and possibly resting on one or more intermediate supports

4.1.1
carrying rope; track rope
static rope arranged to support **carriers** by means of **carrier trucks** which move along the rope

4.1.2
tension rope
rope used for connecting the free end of a **static rope** or the **end sheave** of a **rope loop** to the counterweight or **tensioning device**

4.1.3
brake rope
static rope on which the **onboard brake** acts and which has no other function

4.1.4
signal cable
static cable used for the transmission of signals, such as control or video signals, or telephone communication

4.2
moving rope
rope arranged in such a way as to allow large longitudinal movements

NOTE Moving ropes are usually connected to one or more carriers, or are capable of being so connected.

4.2.1
carrying-hauling rope
moving rope arranged to transmit its motion to **carriers** attached to and at the same time supported by it

4.2.2
haulage rope; haul rope
moving rope arranged to transmit its motion to **carriers** attached to but not supported by it

4.2.2.1
counter rope
in a **funicular railway**, or a bicable **reversible aerial ropeway**, **moving rope** attached to the carriers by **end fixings**, without going through the driving **sheave**

NOTE "Câble-lest" may also be used in instead of "contre-câble" in French, or "ballast rope" instead of "counter rope" in English, when the drive station is at the upper end.

4.2.3
towing rope (for ski-tow); haul rope (for ski-tow)
moving rope arranged to transmit its motion to **tow-hangers** attached to it

4.2.4
rope loop
rope closed into a loop by a splice

4.2.5
recovery rope
moving rope whose sole function is to replace the installation **haul ropes** in the event of failure of the latter in order to ensure the return of the **carriers** to the **station**

4.2.6
evacuation rope
moving rope used only for moving evacuation carriers

4.3
end fixing; termination
component connecting one of the ends of a rope to the **component** on which the rope pulls

NOTE The end fixing may, for example, be the connection between a static rope and either an anchorage, a counterweight or a tensioning device, or it may be the connection between an interrupted moving rope and a carrier.

4.3.1
socket end fixing
end fixing formed by a socket within which the end part of the rope is immobilized under the applied tensile load

4.3.2
(haulage rope) fixing drum
end fixing consisting of a drum, around which a **haulage rope** is wrapped to form dead turns

4.3.3
anchor drum
end fixing consisting of a drum attached to an anchorage, around which a **static rope** is wrapped to form dead turns

4.3.4
bending ratio
ratio between either the pitch diameter of the **sheave** (D) and the nominal rope diameter (d) or the pitch radius of the shoe, saddle or **roller chain** (R) and the nominal rope diameter

4.3.5
twist
torsional couple induced in a rope under tension

4.4
double anchorage
condition in which both ends of a **static rope** are anchored

4.5
tensioning device
all the **component**s which are used for maintaining the tension of a rope within pre-established limits

4.6
nominal tension
the theoretical static force applied to the rope through the **tensioning device** by counterweights, or the mean value of the pre-established limits in the case of another **tensioning device**

4.7
transverse force factor
ratio between the tension at a point in the rope and the normal component of a force applied at that point

4.8
tensile safety factor (TSF)
ratio between the minimum breaking force (MBF) of the rope and the calculated tension force in the rope

5 Supports and guides for ropes and carriers

5.1
wheel; sheave
rotating support which imposes its own radius as the radius of curvature of the rope passing over it

5.1.1
deflection sheave
sheave whose purpose is to change the direction of a rope

5.1.1.2
return sheave
sheave at which the direction of the rope is reversed

NOTE In general, a return sheave is situated at the end of the line of cableway.

5.1.1.3
tension sheave
deflection sheave for a **tension rope**

5.1.2
cage (sheave or roller)
device intended to limit the movement of a **sheave** in the event of failure of the axle

5.1.3
derailment detector
device which enables the **derailment** of a **rope** to be detected

5.2
roller
rotating support whose radius is smaller than the radius of curvature of the rope at its point of contact

5.3
support sheave or roller
sheave or roller which normally exerts an upward force on the rope

5.4
compression sheave or roller
sheave or roller which normally exerts a downward force on the rope